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ABSTRACT

Intended for students in elementary school, secondary school, and adult classes, the curriculum guide presents information about human factors and priorities in three kinds of disasters: wilderness emergencies, natural disasters, and man-made disasters. The guide contains lesson plans in each containing objectives, desired understanding, and information for students. Specific lesson plans cover the factors affecting the body in survival situations, the priorities of surviving the unexpected, body enemies during unexpected emergencies, psychological aspects of wilderness survival, energy loss in the wilderness, the effect of heat and cold on the body, improvising wilderness needs, dealing with natural disasters (tornadoes, hurricanes, floods, tidal waves, earthquakes, blizzards, lightning, fires, and epidemics), and coping with man-made disasters (pollution, warfare, civil disorder, and universal risk and modern technology--automobile, airplane, and boating accidents). The guide also includes some teaching strategies, several lesson plans, information about improvised emergency preparedness kits, and a list of recommended books. (SB)

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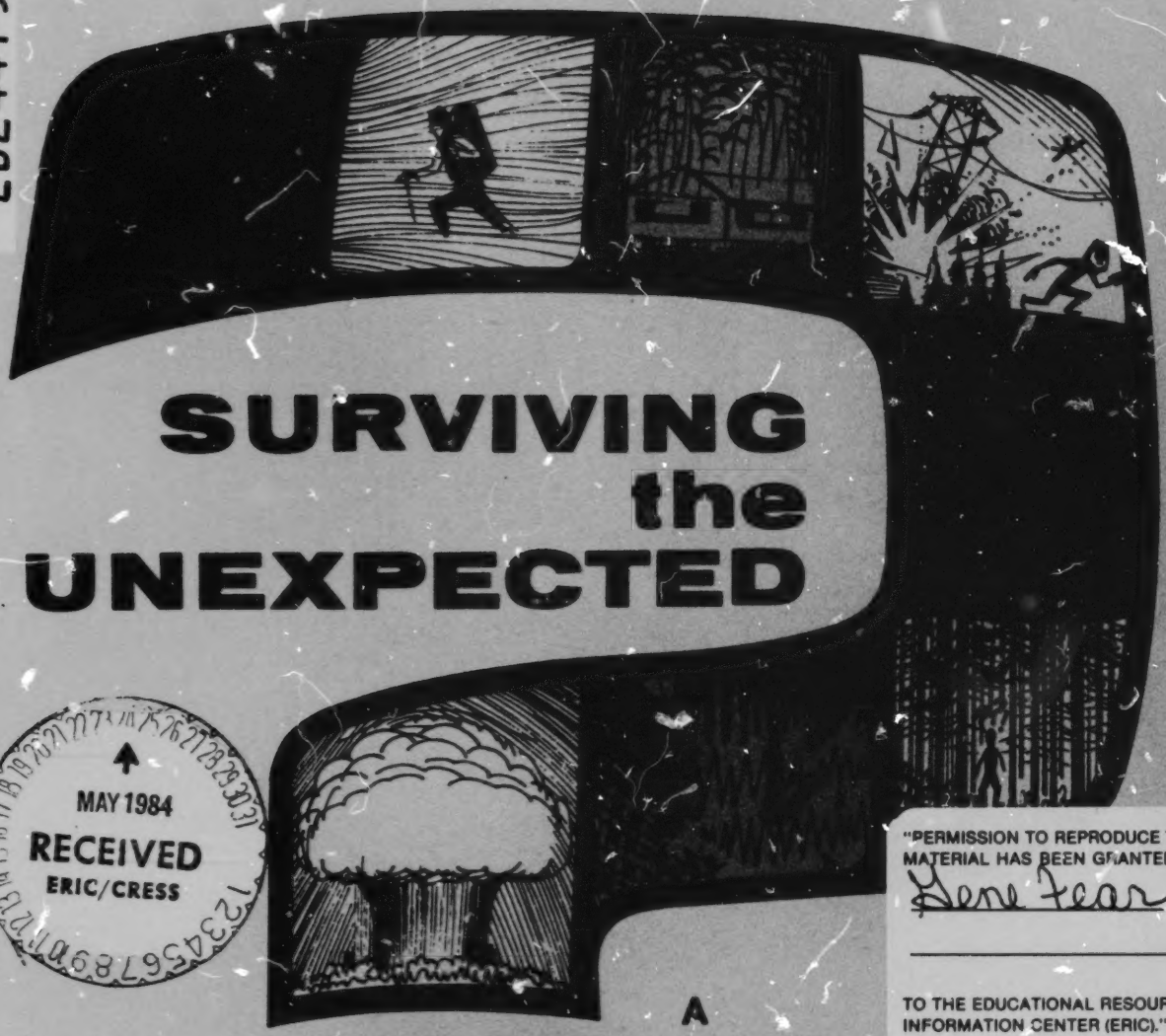

SURVIVING the UNEXPECTED

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A Curriculum Guide For WILDERNESS SURVIVAL and SURVIVAL from NATURAL and MAN MADE DISASTERS

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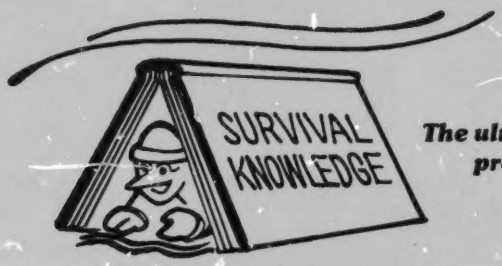

The ultimate body protector

SURVIVING THE UNEXPECTED

CURRICULUM GUIDE

Edited by

Daniel E. Fear

Assisted by

Eugene H. Fear

THIS VITAL TOOL FOR
SAVING LIVES IS ENDORSED BY

"That Others May Live"

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Dedicated to my father.

Without his push, prodding, and knowledge of human survival, this guide may never have become a tool to help people to stay alive long enough to find their necessities of life.

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MODERN TECHNOLOGY'S LEGACY TO MAN

"As we lose the necessity to combat minor daily disasters, we lose the ability to combat the unexpected natural disaster."

- Ev. Lasher
Mountain Rescue

How long has it been since you put out a kitchen fire, fixed a flat, cranked the car, banked the fire, or spent a night without electricity?

Enterprise and competition have made modern technology very reliable - so reliable that many of us are being lulled into complacency.

- Editor's Comment

YOUR SURVIVAL IS YOUR PROBLEM

The rescuers' problem is to carry you back - when you cannot solve the problem of staying alive long enough to

A. Get out of your predicament,

B. Acquire the necessities of life (air, shelter, water, warmth, food).

C. Allow others to bring the necessities of life to you.

SURVIVAL

Survival is staying alive, or keeping the body alive. Survival is a word that describes and encompasses any situation which may cause problems or threats against the body which the survivee has to overcome himself - either alone or as part of a group.

A short-term threat to life can happen easily when man is traveling away from civilization; or it can happen when our modern, mechanized civilization suddenly leaves us, in natural or unnatural disasters. Such events drastically change our familiar environment into one that is often hostile to life.

WHY SURVIVAL EDUCATION IS NEEDED

Modern man has evolved through many generations with a lessening degree of self-reliance in foraging in natural environments for his food, water, and shelter. Even his self-confidence has eroded regarding his ability to analyze and carry out life and death decisions.

Generations ago, man had to be self-reliant to protect, feed and clothe his family. What he could not produce himself, he could barter or trade his surplus products for. Later generations, without material things to barter, began to trade their intelligence and physical ability for money - a substitute for trade goods.

Later generations discovered that becoming proficient and knowledgeable in specific endeavors was worth more money. Specialists received more money for less effort - or less of their time. Thus began our modern era of specialization.

Each specialist became less and less self-sufficient and more dependent upon other specialists to provide the services and necessities he needed but did not produce. Today, the average person lives dependent upon others for nearly all his needs. Modern man exchanges the money he receives for his services to attain shelter, clothing, food, water, electricity, transportation, etc.

Our present generation has massed around the megalopolus. The populace has settled around small areas of work sites and urban areas close to the life supporting service industries furnishing their basic necessities.

During the generation-to-generation transformation, man has lost much of his ability to be self-reliant and self-supporting. Instead, man has become dependent upon specialists for governing and for necessary services.

A sudden natural or man-made disaster can disrupt the supply of our basic life necessities; stop the services of electricity, warmth, fuel, and water; destroy our habitats, shelters and possessions, forcing man to forage for food, warmth, and shelter, or to wait for others to provide these essentials. Such incidents cause havoc to a population unaware of life's basic requirements and inexperienced in being self-reliant. It is this lack of awareness knowledge about the priorities of life and the potential enemies that can threaten life that has created a need for basic survival education.

Any person, anywhere on this planet, is subject to some risk to life. Natural disasters, explosions, fire, pestilence, famine, and war - all challenge life and upset the supply and services balance.

In a major disaster, man may be helpless to provide even the most basic of his needs - warmth, water, food. Worst of all, man not only loses all modern civic services, but he loses the source of his employment and hence all monies to barter or purchase necessities.

Suddenly being forced by choice or chance to live by new rules is harsh treatment. Such emergencies can suddenly become a personal battle for life, which makes every man an island unto himself. Each man stands alone against these enemies, whatever they may be, for survival of man depends upon each man helping himself in providing the basic necessities of life - with or without the assistance or benefit of modern technology.

WHO NEEDS SURVIVAL EDUCATION?

EVERYONE who is dependent upon someone else to provide his needs; who purchases supplies from others; who depends upon a service industry for his energy fuels for operation. EVERYONE who does not have acreage on which to grow his food, or a river, lake, creek, spring, or well to provide water to slake his thirst and maintain his body. ANYONE who does not have insulation to shelter his body. ANYONE who does not know the basic requirements of life.

Everyone should be constantly aware that unexpected emergencies do happen and that they may threaten life anywhere, any time. Today's modern generation should be aware that our civic government and its supporting service industry is not infallible. Natural disasters, man-made disasters, and man himself can alter the local service industry or render it incapable of providing a particular needed service. The inhabitants might then be left to the mercy of their own thinking, foraging, and ability for providing their own necessities. Only through experience and education can our modern populace learn the basic rules their forefathers lived by, but which have been set aside by progress.

CONCEPT OF SURVIVAL EDUCATION

Survival is the challenge to stay alive. Since you have survived long enough to read this, you should have acquired some knowledge about staying alive. How much knowledge about the subject depends upon your curiosity, habits, environment, and input of knowledge. Hence you may or may not have the awareness knowledge necessary to survive a short-term threat upon your life.

Surviving the unexpected emergencies that threaten life is your problem --a problem that, in essence, is yours alone, because unexpected survival problems cannot be planned--they happen. So you must face the problem--with just what you have, where you are--with the sole responsibility for your life resting on your decisions.

No one has to assist you. No one has to find you. No one really has to provide your basic necessities. Even if there are rescuers and agencies nearby who will attempt to help you, you alone must stay alive long enough for them to get to you.

Since you, alone, are master of your destiny, surviving any unexpected emergency becomes your problem to solve. The problem solving can be easy if you know what the problem is, how the problem threatens your life, and how to improvise a defense against that threat.

In unexpected emergencies - natural, man-made, or accidental - you will always have a few certain known factors and many unknown factors.

Known factors: You have a delicately balanced, automatic, bio-electro-chemical, heat-producing body controlled and regulated by your brain and the sensory nervous system. This mass is fed, clothed, protected, moved, and sustained by your mind and the knowledge and skills acquired.

This body will have a given amount of energy at the time of the unexpected emergency. It may be a lot or it may be a little, depending upon the amount of energy fuel recently input and the amount of energy fuel expenditure. Energy is what keeps the body alive, thinking, and moving. Energy is limited. It may be conserved to last a long time, or it may be exhausted quickly, depending upon the actions determined by your mind and the natural elements prevailing in the environment of the emergency.

The amount of knowledge about your body - its energy, its priorities, its enemies - either acquired or practiced, will become the greatest asset in any unexpected emergency that threatens your life.

In any unexpected survival experience you will have to accept the situation with just what you have at the moment it happens, where it happens, and how it happens. Your problem-solving must be based on the known body enemies that threaten life, their priority of influence, and their severity of threat to your life. Acting out the solution will depend upon your body's energy supply, the environmental factors involved, your ability or non-ability to recognize the danger, your skills and abilities, and the knowledge to improvise the defenses needed.

Unknown factors in any unexpected emergency are too numerous and so variable that they cannot be listed. Some compound others. Some counteract others. Some affect the priorities of life. Others influence the mind, causing panic or loss of body control.

Since keeping the body alive is the problem that must be solved, knowledge about the priorities of life and the body's common enemies would help determine the best course of action in sustaining life during the emergency.

That is the intent of this educational project: to instill an awareness in the young students that to sustain life anywhere, any time, the knowledge must be within their brains to recognize and solve the problems that can threaten their very being. This project, to be effective, should progress from the basic knowledge about the body and how it is affected by stress and hostile conditions into the study of the major problem areas which can cause the accidental cessation of our modern technological and artificial environment as we know it today.

Survival education should begin at that age when curiosity level is high. School age students are aware of our complex mechanized society and have been introduced to many dangers by their parents. The educational process should take the next logical step in this awareness education by introducing the variable and detrimental forces of natural environments, along with basic rules of living in harmony with this environment.

The curriculum guide is divided into sections designed to cover all facets of the subject of survival, in tune with the age level of interest. The elementary student, who shows a natural interest in the natural environment, needs to learn about how to survive in that environment he is studying. Phases I and II are appropriate for this age group. Students in the intermediate grades are capable of acting for themselves, and therefore should learn the devastating effect of natural disasters and ways they can help themselves to live. Phases I thru III may be used.

Adults and high school students have the basic knowledge to cope with the many aspects of surviving man-made disasters. All phases may be taught to this group.

PHASE I INTRODUCTION

PRIMARY HUMAN FACTORS AND PRIORITIES

The one known factor that every victim will have during the survival threat will be his own body, with a given amount of body energy, coolant, and chemicals. Each human body will react differently to a given stress or situation because of the victim's knowledge, physical condition and mental reaction.

Body response to thermal imbalance is similar in nearly all warm blooded animals, variable with age, physical condition, attitude, and reserve supplies. The nervous system and circulatory system response to the stress will be the same in most human bodies. Energy use and energy conservation principles are the same. Since basic body physiological responses within the thermal, circulatory, and chemical systems are nearly the same in all humans, doctors have established the priorities needed to halt progressive physiological upset.

With body responses known to be so nearly alike in all humans, survival education should be based on the problem's detrimental effect on the body and the body's response, with primary emphasis on the priorities of life and the psychological attitude that controls human behavior during the threatening situation.

These five factors affect each human body involved in a survival or stress situation:

1. Psychological reaction to any stress situation.
2. Physiological effect of temperature.
3. Priorities of life in survival situations anywhere.
4. Basic enemies prevalent in all survival situations anywhere.
5. Limitations and conservation of limited body resources.

The human response, generally similar in all human bodies, must be understood by the survival student. Because many variables are involved in survival in different parts of the earth, survival must first be taught without anything but the body. One must understand that to survive he must keep the complex body alive with or without the benefit of equipment, shelter, or outside assistance and perhaps even despite the loss of some physical abilities, such as vision, hearing, smelling, or mobility and dexterity of the limbs.

Survival of a body-threatening situation may be a very short period of sheer panic and then a long period of sheer boredom, wherein the individual's self-confidence, habits, values and attitudes may be seriously tested.

Those involved must act, despite the lack of outside assistance, to protect themselves from whatever threatens their life. They must respond to their own body problem indicators and body needs. They must diagnose their own aches and pains and reduce detrimental and immobilizing threats of injury in any way possible. Only they can analyze their attitudes, body functions, resources and reserves in situations where resupply of vital air, food fuel, liquids, and chemicals is improbable or unknown.

Alone, a survivor must be flexible in thought and action to adapt to a changing, threatening environment. Most, but not all, survival situations develop from mechanical failure of some type, creating an abrupt change from serenity to hostility. It may occur suddenly or develop slowly from subtle weather and bodily changes. Whatever the cause, it is the threat to life that must be recognized and overcome or the person does not survive.

This curriculum guide is not designed to instruct or advocate specific skills or techniques because of the number of skills, tools, techniques and variables that may be involved in any given task. For an individual to decide which technique to use, he or she must first determine what is needed and what should be made. The intent of the basic survival education covered in this guide is for the student to become aware of the vulnerability and capability of his own mental and physical resources.

POSITIVE ATTITUDE IS THE KEY TO SURVIVAL.

An example of attitude change: The situation involved a fighter pilot flying from Hawaii on a routine defense mission near the North Pole. Three hours away from Hawaii his plane catches fire, forcing the pilot to eject over the Arctic Ice Pack. As the pilot parachutes down, all he can see is snow and ice. His greatest chance to stay alive is for him to change from an Islander to an Eskimo in thoughts, actions, and attitudes before he touches the ice. As he floats downward he should shout to the world below, "I am just like an Eskimo. I can hunt like an Eskimo and live like an Eskimo. I am an Eskimo."

He must touch the ice as an Eskimo if he hopes to cope with the hostile environment.

Think about other changes that may have to be made.--- A Frogman, Arab, Caveman, Pioneer.

PHASE I CHAPTER 1

PRIORITIES OF SURVIVING THE UNEXPECTED

OBJECTIVE: That each student will understand that this civilized, sophisticated, and complicated life is a dangerous place, where unexpected emergencies can threaten life; that he must overcome these problems himself.

DESIRED UNDERSTANDING:

1. You, alone, are master of your destiny - anywhere, any time.
2. Natural or man-made disasters do happen; and man, himself, when pitted against himself, is a threat.
3. You live in a civilization that depends upon services for 99% of your basic needs.
4. Artificial environments depend upon the service industries.
5. Natural environments can be hostile to life.

I. Survival challenges do happen.

- A. Lost alone in the forest.
- B. Stormy weather - blizzard, rain, fog, wind, sun.
- C. Natural disasters - flood, earthquake, tornado, hurricane.
- D. Man-made disasters - auto accidents, explosions.

II. Artificial environments - even those protected under the parental roof - may be subject to risks that challenge life.

- A. Loss of service industry (water, electricity, gas, etc.).
  1. Effect on homes
  2. Effect on schools
  3. Effect on sources of income
- B. Loss of artificial environment.
  1. Fire, flood, earthquake
  2. Loss of shelter during storms
  3. Stalled automobile - miles from service industries

C. Loss of body protection.

1. Clothing - warmth or shade
2. Shoes - mobility

III. Natural environments - Each student will understand the variable forces of natural environments and the basic rules for living in harmony with these environments.

A. Natural environments can be friend or enemy.
B. Weather can warm you, cool you, wet you, dry you, scare you.

1. You choose: clothing, activity, goal, limits.
2. Little danger to life if prepared.

C. Nature is stronger than man; he must cope with it the best he can.
D. Most storms are of short duration.

IV. Strange environments - are the home of strange living things, some dangerous, some friendly.

A. Man away from modern conveniences

1. No telephone
2. No lights
3. No heat
4. No home for protection
5. No doctors
6. No place to buy your needs
7. Little food
8. Often no water

B. Darkness changes strange land into hostile land (psychologically). Wilderness travel during darkness is dangerous.

C. Animals must be respected. This is their home, you are trespassing.

1. They are curious.
2. Dangerous? Generally, only if cornered, wounded, pestered, starving, diseased, or have young ones.

D. Lost - confused as to which way is home, camp, or auto.

1. Mentally upsetting - bewilderment, fear, imagination, worry, panic.
2. Rules to offset panic anywhere: STOP -

S - Sit down, rest, calm yourself
T - Think back, think ahead
O - Observe everything about you, near and distant
P - Plan your next move and any future moves

PHASE I CHAPTER 2

PRIORITIES OF LIFE

OBJECTIVE: The student will understand that in any unexpected emergency, keeping the body alive and functioning must be the first and chief goal.

DESIRED UNDERSTANDING:

1. Material things, unless they can contribute towards sustaining life, become irrelevant.

2. Abandoning preset plans and goals will be mandatory, because determination to proceed in the face of adverse environmental conditions can only increase the threat to life.

3. To stay alive, your body requires certain necessities before anything else.

4. The body's automatic biological functions need support.

5. The values of these functions determine the basic processes of life.

6. The three most important aspects of an emergency should be considered in the following sequence: breathing, bleeding, temperature.

I. Breathing - The total body needs a continuous supply of oxygen for the living cells to produce the energies of life.

   A. Pollution - smoke, smog, gas fumes.
   B. Suffocation - loss of air supply - water, avalanche, air-tight room, autos.
   C. Anoxia - three or four minutes without oxygen is very dangerous to life.
   D. Shock, electrical or injury - can stop all automatic body functions.
   E. Altitude - air much thinner.

II. Bleeding - Loss of blood beyond two quarts will constitute a dire threat to all the living cells and the body's automatic controls.

   A. Injury to any of the body's major arteries will cause blood to be pumped out of the body.
   B. You can lose two quarts of blood in approximately three to four minutes.
   C. Loss of one quart of blood will upset the body's physiology.

III. Temperature - A change in the body's inner core temperature of two or three degrees above or below the normal body temperature will upset the body's physiological processes.

Major disruption of the four major systems of the body:
Nervous system
Circulatory System
Chemical System
and the Thought Processes

A. Your body is a heat-producing, chemical machine.
B. All warm-blooded animals require a nearly constant temperature.
C. Human body optimum temperature - 98.6° F.
D. Human body has very narrow temperature tolerance:

Normal	98.6° F.
Low	95.0° F. muscle action deteriorates, thinking slows down
	92.0° F. loss of ability for self-help and reasoning
High	101.0° F. muscle action deteriorates, thinking slows down
	104.0° F. loss of ability for self-help and reasoning

E. Any change in body temperature increases the total burden on the body.

F. Body reactions to detrimental temperatures:

1. Cold - Automatic body heat regulatory processes will use enormous amounts of your limited energy supply in the attempt to rewarm the body to normal.
2. Heat - Automatic body heat regulatory processes will use excessive amounts of body water in the attempt to cool the body to normal.

G. Heat problems include: solar or artificial heat, radiated heat, reflected heat, confined space, excess clothing, and fever.

H. Major chill factors affecting the body are wind and wetness, exposure of a large portion of the body's surface, body heat losses by conduction, evaporation, convection, radiation, and respiration.

I. Since man cannot control the natural environment he visits, his best defenses against heat and cold will be his protective clothing and control of his muscular activity.

PHASE I CHAPTER 3

PRIORITIES OF BODY SURVIVAL

OBJECTIVE: The student will know that air, shelter, water, warmth, food, rest, and the will to live are the basic necessities for keeping the body alive. He will fully understand how these necessities affect the body. Finally, the student will understand that the necessities have an order of importance which should always be considered.

DESIRED UNDERSTANDING:

To recognize a threat to life; to reason, analyze and solve the problem of providing the basic body necessities in the sequence of their importance to life.

I. You can live for approximately:

3 minutes without air
3 hours without body shelter, under extreme conditions
3 days without water
3 weeks without food
? without the will to live

A. You can live approximately three minutes without oxygen.

1. Living cells cannot produce the energies necessary for life.
2. Brain cells are damaged, affecting the automatic processes of the body.

B. You can live approximately three hours without body protection in extreme cold or extreme heat conditions.

1. The body is a delicately balanced, heat-producing, chemical machine, dependent upon a nearly constant temperature of 98.6 degrees F.

2. Energy producing cells may slow down or stop producing the vital energies of life whenever the temperature goes above or below the optimum 98.6 degrees F.

3. Change in the inner body temperature upsets the delicate balance and sets up disturbances that increase the total burden.

4. Mental facilities and nervous response dull. Loss of reasoning and reaction abilities increases rapidly.

5. Muscular coordination and activity slow up, affecting mobility, senses, and skill abilities.

6. Volume/capacity ratio of the vital closed hydraulic circulatory system, if altered, will seriously affect the blood flow.

C. You can live approximately three days without water.

1. The human body is approximately 75% water.

2. One-tenth of one degree F. increase in the body core temperature will start the automatic heat regulatory controls, which will then activate the sweat glands and secrete water over the skin to cool it.

3. A loss of water equal to approximately 7% of the body's total weight can cause dehydration and will be a serious threat to all normal chemical body functions.

4. Ration your sweat - not your water. Drink water when thirsty.

5. The mind can overrule thirst, so when it is hot or you have been perspiring, drink more water than you normally do.

D. Rest is necessary for the body to repair and restore itself.

E. You can live approximately three weeks without food - if you have water and minimize your energy use.

1. Stored body fuel, called fat, may be converted to usable energy at the rate of two pounds per twenty-four hours.

2. Food is a great pacifier but not essential in short-term survival.

3. Usable body fuel is limited -- it may be conserved to last a long time, or it can be used up quickly.

4. Energy input and energy output are controlled by the mind, the body, and the activity.

5. Wise use of the limited supply of usable energy is mandatory to extend life long enough to get out of the crisis.

F. No one knows how long he would live without the will to live.

PHASE I CHAPTER 4

BODY ENEMIES DURING UNEXPECTED EMERGENCIES

OBJECTIVE: The student will understand that the threat to life during unexpected emergencies always will be centered around certain body enemies that attack the body in a variety of ways. Sometimes singly, sometimes in concert -- but always these enemies will possess a threat to the process of sustaining life without assistance or guidance from others.

DESIRED UNDERSTANDING:

The student will memorize the following and their order of importance.

Body Enemy Number 1 - YOURSELF
Number 2 - INJURY
Number 3 - TEMPERATURE
Number 4 - DISEASE

I. Body enemy Number 1 -- Yourself: Humans must control the mind because the brain and nervous system control the body.

A. Your mind, determination, imagination, and attitude control all input of body fuels and all mental and physical output of energy.

B. Panic, irresponsibility, and fears endanger the body through injury or exhaustion of energy reserves.

C. The ability or inability to analyze the problem that endangers life will quickly determine the success (life) or failure (death). Survival is solving the problems of staying alive long enough to get out of your predicament.

D. Negative attitudes can destroy the will to live and lead to a do-nothing situation.

E. Positive attitudes help to calm the fear and solve the immediate problems that are prevalent in all emergencies.

F. By nature, man is designed to react to recognized danger by immediate fight or flight. Sometimes this is not the best reaction to the threat. Calm, intelligent analysis will help to determine the best and safest course of action.

II. Body enemy Number 2 -- Injury: Body injury may be such that it will affect the priorities of life and the priorities of survival.

A. Injury to chest can cut off the air supply that is vitally needed for life.

B. Arterial bleeding must be suppressed or life processes will fail quickly.

C. Injuries to limbs may compound existing problems due to loss of mobility, skills, and dexterity. This could seriously affect self-help.

D. A major injury causes shock -- a blood and temperature problem. Shock always compounds the problem, especially to a person alone and dependent upon self-help.

E. All major injuries will create serious psychological problems, producing attitudes that can influence the will to live.

F. Infection of minor injuries should be discouraged to facilitate recovery.

III. Body enemy Number 3 -- Temperature: All living organisms that oxidize food fuels for energy are dependent upon a nearly constant internal temperature.

A. The human living cell in the complex, chemically structured mass of bones, tissue and muscles, maintains its orderly production of energy within a very narrow temperature tolerance: 95° F. to 101° F.

B. A few degrees above or below the normal 98.6° F., the body's automatic temperature regulating controls will react defensively.

C. The effectiveness of the body's heat defense capability is limited.

1. Energy to move muscles to produce heat.
2. Body water to secrete coolant to the skin surface.
3. Rate of heat gain (environmental and muscular activity)
4. Rate of heat loss (environmental and muscular activity)
5. Effectiveness of body's protective shelter.
6. Input of water.
7. Input of body energy and its reserves.
8. The body's basic chemical balance.

D. Severity of heat loss or heat gain is a personal problem that must be solved by recognizing the problem indicators in advance of their insidious consequences.

E. Temperature regulation within the body is so critical that if a change of one-tenth of one degree F. occurs in the core it will affect the physiology of the body.

F. Whenever body temperature rises above 104° F. or drops below 92° F., the human body normally loses the ability to reason effectively and react physically. Temperature tolerance will vary between the old, middle aged, and young. The young are able to withstand greater temperature fluctuations.

IV. Body enemy Number 4 -- Disease: Many germs are present at all times on the skin and within the body. They are held dormant by the body's defense mechanisms, well-being, and temperature.

A. Normally, the body's defense mechanisms can control these germs, except when over-exposed to communicable bacteria or virus micro-organisms.

1. Whenever there is a chemical imbalance of the human body, it affects the defense mechanisms.

2. Whenever the body temperature is below normal, dormant germs can gain a foothold.

B. During a short-term emergency, disease should be considered but is not an immediate threat to life. Germs are generally slow acting.

C. Awareness of their presence and avoidance of exposure or contact with communicable disease can prevent most disease from gaining a foothold.

" HEMO THE MAGNIFICENT"
28 min, 316 min. Color Sound movie
An excellent film to dramatize this subject.
available from
Rentals, Bell Telephone, or Red Cross.

SURVIVAL IS:

Solving the problem of staying alive.

Recognizing a challenge against your life.

Reacting to the body's problem indicators.

Ascertaining the priorities needed to maintain life.

Combatting the body's enemies that threaten life.

Improvising the immediate necessities.

These demands must be met regardless of the cost in material things or energy expenditure. It's your body - and your problem.

COMMON SENSE: In an analysis of what is needed to cope with emergency situations, we concluded that common sense could, if used by all, alleviate the major problems. But it doesn't seem practical to try to teach common sense -- you have it or your don't. But in looking at people with outdoor common sense (people accepted by land management as good outdoorsmen, experienced, reliable, and protective of the lands they travel) we found they have certain things in common:

They understand the priorities of life and survival.
They can recognize and analyze body problem indicators.
They can recognize a danger problem developing.
All are curious, inquisitive, alert, confident, and search for information.
They can apply sound judgment to time and environmental problems.
They are decisive after analysis of the problem or threat.
They enjoy a mental or physical challenge.
All are seemingly non-destructive of material things; most are do-it-yourselfers, and work well alone.

When we look at this list of basic human attributes, we find that many of these qualities are absent in those people adjudged to be the problem makers for outdoor recreation land managers. Furthermore, we found that those experienced outdoorsmen we analyzed had to acquire extra knowledge in several categories, either by reading, practicing, or taking courses. These categories of knowledge can be taught to bolster self-confidence in providing for and protecting life away from civilization:

Self First Aid
Survival knowledge
Navigation
Outdoor Living

After reading the above, how do you rate yourself? Your students?

TIMING THE PRESENTATION FOR GREATER IMPACT

An ideal teaching situation can develop in almost every class within the school. Obviously P. E., where exercise is mandatory, is best suited to evaluate certain aspects of energy fuel, heat, cold, and fatigue problems. Only the teacher and students can determine the teaching opportunities that exist.

Survival is problem-solving -- with the victim/student figuring out his problem from the knowledge he has stored within his brain. He should know about the enemies that can harm him, and how they harm him. Finally, the student should know how to prevent these enemies from getting too great a hold upon his body. Nearly all activities present some risk or danger which could affect the priorities of life.

Every day the newspapers retell stories of the body's enemies and recapitulate natural and man-made disasters. Student analysis of such history could be a very effective way of teaching. Students should analyze hypothetically how they would cope with a similar situation, using their own immediate resources.

The subjects relevant to staying alive should be taught as they appear in the schoolroom or school yard. For maximum impact, the student should feel the effects of the body's enemies.

Teaching the psychological effect of stress lends itself to group discussion, where each expresses his basic fears and acknowledges the fact that he is insecure in strange environments. Here the teacher must lead and direct the discussion to bring forth all the factors of mental stress, emotion, and the desires, as well as known fears.

Fatigue is best taught immediately after the majority of students are feeling fatigue (as after strenuous activity).

Heat problems should be mentioned whenever it is a hot day, with some persons showing sunburn and sweating. The value of shade will be appreciated, and heat dangers can be emphasized: sunblindness, sunburn, dehydration, salt loss, and heat absorption.

Cold problems may be talked about during field trip rest stops, where wind (convection) suddenly cools the body. Explain the dangers of sweating in cold environments, the value of clothing or protective shelters. Compare the immediate area under various weather and seasonal conditions.

Wetness may be demonstrated many ways. Compare the feel of a wet sleeve and a dry sleeve. Dip a student's hand into lake or stream for first-hand effects of evaporation cooling, or simulate with hot water cans. Talk about the danger of wet clothing any time you have a wet Joe and a dry Johnny. Anyone shivering? Why?

Blackboard: Explain the body's tropical air environment and why it is necessary. How do humans maintain and contain that warm air? How do the animals use their hair to keep them warm? Explain insulation of a home and clothing.

Conduction heat loss occurs any time a person is sitting on or touching anything cooler than the body, for example, during campfire or field trip when class is sitting on the ground. Explain ground insulation and why it is needed. Get out of a chair and feel the area your body has just warmed by conduction. Relate this to energy loss. Can your students afford this loss? What if energy supply is threatened?

Most "how to" survival education must be hypothetical. It is unwise to risk life or endanger the human body to point out the merits or hazards of some facet of the subject. Simple experiments will suffice in demonstrating the effects and basic survival theories of most problems. Water chill, however, can be nicely demonstrated by tossing someone into a lake -- if you can't get the point across otherwise.

When instructing or teaching survival, your goal is to present a course that contains enough information to allow any student to recognize that:

Wilderness Emergencies and survival experiences require

- Positive mental control
- Adaptation to a changeable environment
- Coping with unknowns
- Recognizing immediate needs
- Letting others know of your distress
- Understanding priorities
- Improvising immediate needs
- Conservation of the human body's limited reserves:
  - Energy
  - Coolant
  - Chemicals

PHASE II

INTRODUCTION

SURVIVAL IN WILDERNESS EMERGENCIES

DEFINITION OF WILDERNESS: A wilderness is, by definition, (1) an uncultivated, uninhabited region, (2) any barren, empty or open area, as an ocean, (3) a large, confused mass of people or tangle of persons or things, (4) a wild condition or quality.*[1]

ASSUMPTION: That volunteers and responsible agencies will respond to any human in distress.

Example: They may respond - if they know the approximate area and have indications that you require assistance.

TIME LAG: That period of time between the emergency's beginning and the establishment of normal security.

Example: Your house catches fire. You call the Fire Department. Five, ten, or fifteen minutes later they arrive to support your effort. During this time lag you must act on your own in defense of life.

Example: You have an auto accident. Loved ones are seriously injured. You report the location and the problem. Depending upon location, traffic, and many other circumstances, the police, ambulance, and medics will arrive sometime. This time lag period is your time and your loved ones' lives may depend upon your knowledge and actions.

Time lag will be present in all emergencies and survival situations requiring outside assistance. Some victims have been assisted in minutes, others have been on their own as long as 50 days.

The first few moments of any emergency are the most critical. In this short time, survivors set goals that determine the final outcome of the emergency.

The student should understand the types of emergencies and survival situations:

TYPES OF EMERGENCIES: - Threats to Survival

Instant - Very real. It is happening or has happened. Auto accident, rockfall, explosion.

Here and now.

1. Webster's New World Dictionary of the American Language, The World Publishing Company, 1954.

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Imagined - The guilt reaction, fear of the unknown, panic.

Upsets rational thinking, produces false fears, anxieties and tension.

Anticipated - The wait for the aftershock that may follow the initial quake, etc.

Burdens the mind with future problems that may not happen. Unless it leads to action that will ward off possible danger, these false anxieties upset rational "here and now" problem solving.

TYPES OF SURVIVAL SITUATIONS:

Instant - The real here and now. Falling, explosions, fire, accident. Luck plays a great part in initial survival from injury. You may have little control of your destiny until the action stops.

Body response will depend upon your physical, mental reflex, and recognition of a dangerous threat to life. (Affected by fatigue, dehydration.)

Short Term - Here and now. Weather, terrain, signals, equipment, assistance, injury and supplies determine priorities. Attitude, skills, knowledge and experience are of major importance in suppressing detrimental factors and sustaining life.

Staying alive with knowledge and conservation of limited body resources.

Long Term - (Over 5 days) Body reserves demand resupply of vital necessities. Knowledge, skills, techniques, food acquisition, water, shelter, attitude, goal setting, navigation are valuable assets to travel and sustain life.

Change of habits, attitudes and values; goal setting, self talk, and knowledge of nature help to sustain life.

POSITIVE MENTAL CONTROL: Every long term survivor set a goal to live sometime during the early periods of the emergency. This single purpose goal was the central focal point for all thoughts and actions. He uses affirmations and self talk to acquire the self-confidence to cope with unknowns and negative thoughts.

PHASE II CHAPTER 1

PSYCHOLOGICAL ASPECTS OF WILDERNESS SURVIVAL

OBJECTIVE: Each student will understand that in any emergency there will be mental stress which he must recognize and control.

DESIRED UNDERSTANDING:

1. The mind and brain control the total body.
2. The mind must recognize a problem before it harms him.
3. The mind can find a solution to the problem and improvise basic needs.
4. Imagination can help solve problems or it can create problems.
5. Every person has a mental comfort zone - a level of self-confidence.
6. Calm, determined thoughts and actions destroy the urge to panic.
7. Basic fears will be present.
8. The brain is the best tool in any survival emergency.

Instructor - Set the tone of this subject by telling your experiences with panic and fright.

I. Psychological aspects of stress:

A. The brain gets its energy to function from food oxidized in a near-constant temperature environment.

B. The brain controls all automatic body functions - breathing, digestion, heart, muscles, etc.

C. The mind is a storehouse of knowledge, with ability to recognize danger and to solve problems by reasoning and application of knowledge.

D. The body's immediate physical condition determines the ability of the mind to function.

E. Body temperature changes will affect mental and physical abilities.

Resource: WILDERNESS EMERGENCY, Chapters 4 and 5

II. Mental Stress of Wilderness Survival:

A. A strange land can be frightening and upsetting to a person placed there unexpectedly.

B. The wilderness can be friend or enemy, depending upon attitude, knowledge, and skill.

C. Wilderness is generally devoid of human habitation, street signs, and the conveniences of modern civilization.

D. Persons lost in the wilderness are subject to a loss of self-confidence.

E. Fear of the unknown, fear of discomfort, and fear of one's own weakness are the greatest enemies in wilderness survival.

III. Physical threat to life in wilderness survival:

A. Terrain and weather dangers are always present (create fear of height, fear of injury).

B. Darkness causes loss of mobility and visibility (stimulates the imagination).

C. Inability to provide adequate body shelter (creates discomfort).

D. Lack of immediate assistance (creates a fear of one's own weakness).

E. Lack of food and water (seriously affect the physiology of the body).

F. Increase in energy expenditure results in fatigue and reduces will to live.

G. Man must do something, mentally and physically, to help himself, or he will perish.

IV. Wilderness survival is 80% mental, 10% equipment, and 10% skills. Almost any place can be dangerous, unfriendly, unfamiliar, under certain conditions. Determination, "give-up-its," irresponsibility, or imagination can affect you any time.

A. Body enemies must be recognized and controlled.

B. Determination to get home when lost is often foolish. Determination to survive is obviously good.

C. The mind is a storehouse of both usable and non-usable knowledge.

D. The mind must be calmed by constructive activity.

E. Imagined problems distract from the real problems.

F. Being lost is not the real problem -- it is just a situation. The real problem is to stay alive long enough to become unlost.

G. The mind controls the body. The body controls energy use and energy loss; and energy provides the fuel to keep the mind reasoning your problem.

V. Mental factors which affect survival.

A. Determination to gain a goal, regardless of consequences.

B. "Give-up-itis," do-nothing attitude.

C. Imagination -- seeing, hearing, fearing that which is not there.

D. Basic fears present in all persons:

1. Fear of the unknown
2. Fear of discomfort
3. Fear of weakness
4. Fear of being alone
5. Fear of darkness
6. Fear of animals
7. Fear of people
8. Fear of death
9. Fear of punishment
10. Fear of personal guilt

VI. Emotional state of mind often plays a very large role in survival.

A. Emotions, such as love or hate, can affect the will to live.

B. Emotions -- anxiety, hate, fear, love -- also overrule good judgment and common sense reasoning, which are so necessary to problem solving.

C. Emotions can alter eating and drinking habits, affecting well-being.

The FUNDAMENTAL LAW OF THE MIND is that a human being always acts and feels and performs in accordance with what he imagines to be true about himself, his environment and the immediate situations.

If he thinks he may not survive, chances are he won't even try.

MENTAL CONTROL: When the mind loses control of man's activities and thought processes, imagination and fear blossom to intensify the problems. Often imagined terror or panic so engulfs the mind that it needs some outside stimuli or determined positive thought to trigger repossession of rational thoughts.

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CLASSROOM ACTIVITIES IN MENTAL STRESS

1. List wilderness things you are afraid of. Analyze the real danger of each.

2. List effect of darkness dangers. Analyze them.

3. Compare the effect of being cold in town to being cold in the wilderness. Analyze the fear of discomfort levels.

4. Compare animals that live in the forest. Which are dangerous to man? Do they have fears? Do they panic? If, when, why, and how do they panic?

5. Could wild animals survive in our civilized cities? Would it be a strange environment and frighten them?

6. List the imagined problems you have had that did not develop into real problems.

7. List the ways you would calm a friend down in a survival situation.

FIELD ACTIVITIES
Psychological Aspects of Wilderness Survival

1. Field trips anywhere, or any time: city, farm, wilderness. Have students explain being lost, being hungry, being afraid in that environment.

2. Wilderness field trip: Students should consider darkness problems, storm problems, or any other problems they might encounter at that study site.

3. Have group look at a distant stump through partially open eyes. What animal does it look like? What if you were alone?

4. Divide group into two sections. One section can be offered a reward for finding something (four leaf clover, etc.), the other section is offered nothing for the same task. Evaluate the two sections and their determination to succeed in the task.

"THE LOST HUNTER"
An excellent film to show how the mind can create wilderness problems and panic.
Available from most
State Libraries, Game Dept., film rentals.
by Film Originals, Boise, Ida. 83705

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HUMAN FACTORS IN WILDERNESS EMERGENCIES

The student must be aware that whenever the body is threatened from any source, the whole body will be affected. Each body reaction will cause other reactions.

THE BODY'S LIMITED RESOURCES:

Knowledge	- Limited by individual input and quality.
Air	- Limited by situation, environment, and quality.
Coolant	- Limited by input and body mass and chemistry.
Energy	- Limited by input, quality, body mass, acclimitization.
Blood	- Limited by volume/capacity ratio and temperature.

Energy was chosen as the body resource that merits the greatest emphasis because it is a critical factor for everybody during any emergency. Energy will affect the utilization and distribution of the other limited resources. These need to be clarified by the instructor to allow a full understanding of energy use within the whole man concept.

KNOWLEDGE IS LIMITED: Experience is the best teacher, but few of us can be knowledgeable in all things and all places. Often we are faced with unknowns because we specialize our education to selected interests. Hence the city apartment dweller, office worker, bookworm might be at a loss on a Wyoming Ranch, while the rancher may be unable to cope with city emergencies.

Since people specialize in technical services, the majority find it easier to pay some other specialist to repair, produce, or service their necessities than to acquire the knowledge, experience or equipment needed to do it themselves. There are few services that specialize in instant protection from specific natural or manmade emergencies. Your knowledge must serve your needs until services can be purchased or provided.

Knowledge is of great value in recognizing danger. Your brain can remember only that which you have learned by reading, hearing, seeing, or experiencing.

Example: The small child sees the bare electric wires as playthings but the adult sees them as danger.

AIR IS LIMITED: You can live approximately three minutes without oxygen. In some situations you can get too much or too little. It can be polluted, too hot, or too cold. Whatever the situation, you will have in your body only a limited amount that can be used without resupply. In survival situations it becomes the Number One priority of life. If you don't have it, acquire it fast, any way possible.

Experiment: Hold your breath as much as possible while performing strenuous exercise. See how much more quickly you tire than when breathing sufficiently.

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PHASE II

BODY COOLANT IS LIMITED: Like energy, this vital supply is necessary for the body to think, move muscles, digest food, and react to emergencies. Water is more important than food, and depletion will affect the body's three major life support systems (circulatory, nervous, and chemical).

The average human body has water reserves to last nearly 10 days at rest in a comfortable environment. Yet this limited reserve supply can be perspired away in a few hours when exercising in an extremely hot environment. Water lost through perspiration, respiration, urination must be replaced quickly. Otherwise water will be removed from the blood and tissues to protect the priority needs. Water can be stored within the body for a short time. Unlike energy, water cannot be restored by rest.

Example: An automobile is stuck in the sand on a remote road in Death Valley. The driver is working at digging the auto out. The sun is beating down on his body; heat is reflected from the ground; his feet are in the hot sand; and he is working hard moving muscles and worrying. Heat gain will be terrific, perspiration and respiration rate very high. He probably will collapse in less than two hours if he doesn't resupply his water and reduce heat gain.

Body coolant will affect the body's chemical balance. Few of us worry about the chemicals of life because our bodies rarely develop a deficiency. This can happen when the normal habits of eating, sleeping, and drinking are disrupted by emergencies or situations where resupply is curtailed. Of all the chemicals the body needs, only salt (sodium) is depleted quickly. Salt is lost from the body during perspiration. This loss may not threaten life, but it can make you miserable with cramps (muscle spasms) in the large muscles.

Example: A person hikes uphill for six hours in hot weather, perspiring profusely. He drinks water often, even rests often, and eats his nibble food. In camp that evening he experiences painful leg cramps and abdominal cramps, loss of appetite and sleep. His water management was good, but his salt management caused a chemical deficiency.

BODY BLOOD SUPPLY IS LIMITED: Although the body has a fantastic pump and circulatory system that supplies the trillions of living cells, muscles, bones with all their necessities when they need them, the volume of blood fluid is limited. Severing a major artery can cause blood to flow from the body at approximately the same rate as the kitchen faucet. This loss will quickly upset the volume/capacity ratio of the circulatory system. Any loss greater than one quart should be considered dangerous to life. Knowledge of first aid, pressure points and pressure bandages is invaluable in controlling arterial bleeding.

Example: In the 20 minutes you have been studying this chapter, your heart has pumped approximately 55 gallons of blood to the body's vital organs.

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PHASE II CHAPTER 2

ENERGY USE - ENERGY LOSS IN THE WILDERNESS

OBJECTIVE: Each student will understand that energy is limited; that he alone determines the input and output of his limited supply; that weather elements and rate of muscular activity pose the greatest threat to his limited supply of energy.

DESIRED UNDERSTANDING:

1. The limited supply of usable energy will take the body so far, so fast.
2. The human body is very similar to an automobile.
3. Human energy is the "go" power. You can quickly exhaust it, or you can conserve it to last a long time.
4. Heat loss is a form of energy loss; heat is primarily produced by muscle use.
5. Energy use creates fatigue. Fatigue reduces muscle effectiveness needed for self-help.
6. Rest and sleep are important to energy renewal.
7. Muscles use mostly sugar for fuel.
8. The best way to conserve energy is to slow down energy use and energy loss.
9. Weather elements steal energy.
10. Understand the rules for conserving energy.
11. Wilderness foods often are not worthy of the expenditure of your energy to gain their energy.

Instructor - Set the tone of the subject matter by telling of your personal experience with exhaustion or set up a hypothetical case of energy loss.

Resource WILDERNESS EMERGENCY, Chapters 3, 5, and 6

I. Energy -- human "go power":

A. The body uses air, water, and food fuel to produce energy.

B. Three types of energy used by the body:

1. Electrical energy - brain, mind, and nervous system.
2. Mechanical energy - to contract muscles.

3. Chemical energy - to use vitamins and chemicals that make up the total body.

C. Shortage of any of the three body fuels causes loss of production of the three energies of life.

D. When the body is unable to move muscles, it is unable to produce enough heat to sustain essential energy levels.

E. Energy production from fuel has a very narrow temperature tolerance.

F. The body's energy supply is determined by the amount and quality of rest (sleep), the amount and quality of food input (time of input has an effect), and the quality of one's physical condition.

G. Energy, or lack of it, determines the success or failure of your survival experience.

II. Energy supply is limited.

A. In any emergency, anywhere, you will have only a given amount of usable energy.

B. You alone determine how to use this limited energy.

C. Your limited supply will take you so far, so fast.

D. Energy can be conserved to last, or it can be used up very quickly or blown away by the wind.

E. The human body is like an automobile - both have a limited supply of fuel. Similarities of human to automobile include:

1. Both have electrical systems.
2. Both have a complex fuel-using system.
3. Both need water for cooling.
4. Both need protective covering in order to control temperature.
5. Both oxidize fuel.
6. Both are subject to narrow temperature tolerances.
7. Both must be controlled or they will run rampant.
8. Both the auto and the human have limited energy fuel storage.
9. Both use fuel rapidly when traveling fast.
10. Both use fuel slowly when traveling slow.

11. Both suffer the effect of wind (using more fuel).
12. Both use more fuel going up hills.
13. Both must be in good physical condition to run well.
14. Both stop when vital parts fail to function.
15. Both create waste products which must be eliminated.

A minor but important difference in auto and man is that the auto has a fuel gauge which warns the user when the fuel tank is low. The human has to guess at his fuel tank level.

III. Energy use problems:

A. Wilderness terrain is strange, rough, and energy consuming.

B. Wilderness travel exposes humans to hostile weather, away from immediate shelter and assistance.

C. Using energy creates waste products which must be removed or they saturate the muscles, tissues, and bloodstream.

D. Using energy fast creates muscle problems fast.

E. When usable energy stored in muscles is used up, it must be replaced by the bloodstream's delivery system.

F. The blood circulatory system is capable of serving only one master well at a time: digest food, move muscles, or think.

G. Blood brings fresh energy to the muscles and takes waste products to lungs and kidneys.

H. Ability of the bloodstream to carry fresh fuel is dependent upon the kidneys' and lungs' capacity to clean waste products from the blood returning from the muscles.

I. A build-up of waste products at the muscles, or the lack of fresh fuel delivery, results in fatigue.

J. Fatigue is dispersed by rest and sleep. Ten minutes rest per hour normally will remove fifty per cent of the accumulated waste in the bloodstream.

K. Fatigue leads to exhaustion, or total inability to move muscles - the most serious threat to life in wilderness survival.

IV. Energy loss problems in the wilderness:

A. Loss of body heat is a form of energy loss.

B. Excessive heat loss or energy loss, will affect the mind (brain) and affect its ability to function rationally.

C. Excessive heat loss or excessive heat production causes change in internal body temperature, which affects the production of the three energies of life.

D. Water loss via perspiration seriously affects energy use.

E. Wind and wetness chill the body very rapidly, causing shivering and excessive energy loss.

F. Body protection against heat loss and heat gain is absolutely required to assure energy production for wilderness travel.

G. Protecting the body from hostile elements is your responsibility. You alone can recognize the enemy that threatens your energy supply.

V. Resupply of energy in the wilderness:

A. Food and water must be carried.

B. Body protection to prevent heat loss and heat gain is your responsibility.

C. Rate of energy use and loss can be determined and regulated by you alone.

D. Searching for food in the wilds is often foolish. It is not worth the energy required compared to the energy gained.

E. Do you need food? You can conserve energy to last three weeks, if you have water.

F. Hunger pains can be overruled by the mind. Think positively. You can use pebbles in your mouth or drink water.

G. Muscles use a form of sugar as primary fuel, so carry and eat easily digested carbohydrates and sugars as wilderness food fuels.

VI. Rules to conserve energy in the wilderness:

A. Slow down muscle use.

B. Stop sweating; sweating is an indication of excessive heat production. Sweating can precipitate dehydration.

C. Stay comfortable. Blue hands, numb fingers, or any chilling is a warning of body heat loss. Add clothing insulation. Don't let cold steal your body heat.

D. Stay dry. Clothing loses most of its insulation when wet. Wet clothes allow loss of body heat up to 240 times faster than dry clothing.

E. Stay calm. Fear, imagination, or blind determination may overrule good judgment. The uncontrolled mind allows panic reactions, causing waste of energy in useless or even detrimental activity.

F. Wear a hat. The brain receives 20 percent of the body's blood supply and 25 percent of the oxygen intake. The unprotected head can radiate a large proportion of the body's heat.

G. Nibble foods. Eat small amounts of sugary food often as you travel.

H. Drink warmed liquids. Why waste calories heating cold water to 98.6° F?

I. Rest -- don't travel to the point of exhaustion. Rest 5 or 10 minutes each hour to rid muscles of accumulated waste products.

CLASSROOM ACTIVITIES IN ENERGY USE - ENERGY LOSS

1. Compare quality of students' energy input. Discuss merits of various foods.
2. Compare the hours of sleep against the previous day's energy use.
3. List ways class uses energy.
4. Open windows to cool room; keep open till group is chilled. Explain "goose bumps," shivering. Compare types of fabric.
5. List activities that use energy. Compare variable rates of use.
6. List activities or situations that cause energy loss. Natural elements, man-made situations.
7. List and compare value of wild food around home and school.

FIELD ACTIVITIES - ENERGY USE, ENERGY GAIN, ENERGY LOSS

1. Search for edible plants in the area. Compare the energy value. Would you have any problems in preparing the food (cooking, etc.)?
2. Stop group in the shade with light breeze, let them feel energy being blown away.
3. Have the group run about a block on the level. Then talk about its effect on the body.
4. Have this same group run about a block over rough terrain. Compare the two runs, and the amount of energy loss in each.
5. Run fast halfway up a hill and then stop. Rest until the heart slows down, then continue at a slow pace to the top. Compare value of experiment.
6. Note types of energy loss during the field trip.
7. Compare clothing of the group for protection against energy loss. What is the value of the different types of clothing?

PHASE II CHAPTER 3

EFFECT OF COLD ON THE HUMAN BODY

OBJECTIVE: Each student will understand that his body is a delicately balanced heat-producing machine, protected by a layer of tropical air; that certain adverse weather conditions may cause excessive body heat loss; and that he alone shoulders the responsibility for counteracting their threat.

DESIRED UNDERSTANDING:

1. The energies of life are produced within a very narrow temperature tolerance.
2. Energy production, energy use, and reasoning ability are quickly affected by cold in any form.
3. Heat loss is a great danger during a wilderness storm.
4. Clothing and shelter are necessary to provide the body's tropical air layer.
5. Clothing and shelter have variable insulation values.
6. Wind and wetness extract body heat very rapidly.
7. Water immersion takes away body heat 50 times faster than air.
8. Shelters can be improvised to combat the threat of heat loss.
9. Cold environments will affect the priorities of life and priorities of survival.
10. Understand the five major heat loss principles and recognize the symptoms that indicate heat loss.
11. Weather is neither friend nor foe. It is neutral and indifferent to human problems. You can't fight the storm -- it's too big.

I. Why cold is dangerous:

A. The body has a very narrow temperature tolerance.

B. Cold affects the flow of blood as it carries fuel to muscles and cells.

Instructor - Give a resume of newspaper stories about sudden cold storms to start the class thinking about their responses to cold.

Resource: WILDERNESS EMERGENCY, Chapters 3, 7, 9

C. The body's automatic defenses against cold:

1. Restriction of blood flow to extremities.
2. Involuntary shivering to produce muscle movement.
3. Muscles produce heat, but at the expense of energy.

D. Cold environments are miserable, often painful, and always dangerous when one is over-exposed.

E. Excessive heat production (indicated by sweating) is dangerous in cold environments. Sweat will wet clothing, causing excessive heat loss later.

F. Cold affects man many ways. Machines don't operate well, liquids turn solid. Cold changes a familiar environment into a strange place.

G. Unexpected cold often finds a person unprepared to protect the body's tropical air layer.

H. Body defenses against cold use energy from a limited supply.

I. Cold freezes water. Water is vital to the body.

J. Mechanical vehicles can carry a person so far from civilization that he will not be able to walk back alive during cold weather storms.

II. How cold harms the body:

A. Cold in any form increases energy consumption and takes away body heat.

B. Cool blood reaching the heart is a serious threat.

C. Air movement past the body exchanges warm air for cooler air. Rewarming the air layer near the skin is at the expense of energy.

D. We breath in cold air and it must be warmed to 98.6° F. The same occurs with intake of cold food and water - at the expense of energy.

E. The human body transfers its heat to the environment by:

1. Conduction -- touching anything cooler than body temperature.
2. Evaporation -- wetness, sweat, rain, etc.
3. Convection -- wind blowing away warm air from the body.

4. Radiation - Warm water - with large surface area.
5. Respiration - Cold air must be warmed to body temperature.

F. A combination of the above quickly exhausts the usable energy supply.

G. Cold upsets the total body physiology, affecting ability to reason and act in self-defense.

H. Insulation value of clothing may be inadequate or excessive for the particular cold conditions. The amount of clothing insulation needed is determined by the rate of muscular activity and the environment.

III. When to protect the body from the cold:

A. Any time your body is in contact with a heat conductor (air, soil, metal, water, etc.) that is cooler than body temperature, you lose heat.

B. Any time you are away from artificially heated shelter, you must provide body shelter sufficient to maintain optimum body temperature of 98.6° F.

C. Any time you are away from immediate resupply of energy fuels, conservation of energy becomes more important.

D. Any time you are shivering. Mild shivering is the first warning indicator that the body is cooling. Frequent, violent shivering indicates a serious threat to life and the need for immediate counteraction.

E. Any time a wind, rain, or snow storm threatens.

F. Any time clothing gets wet (from excessive sweat or natural wetness).

IV. Improvising defenses against cold in the wilderness:

A. The individual is responsible for body protection and energy management when in a wilderness environment.

B. Slow down energy consumption. Add protective body shelter.

C. Keep clothing dry. Don't sweat. Replace any wet clothing immediately.

D. Get out of shade and into sunshine if possible. If cold, insulate.

E. Build a fire if possible; this will dry clothing and warm the body.

F. If no fire, live like the animals. Burrow in, under, or alongside of protective tree, log, or soil bank. Hollow out small, confined, air space.

G. Consider best shelter for the weather, energy cost, and materials available.

H. Always try to be prepared for cold problems. They happen often and unexpectedly.

V. Conserving heat in cold environments:

A. Don't get wet. Wet clothing can extract up to 240 times as much body heat as dry clothing.

B. Don't sweat. Sweating indicates excessive energy loss and gets clothing wet from the inside.

C. Stay calm. Worry causes imagination to blossom; imagination causes poor judgment, wastes energy on irrelevant problems.

D. Conserve energy. Don't increase exposure by traveling in a storm. Your remaining energy is all you have to produce life-saving body heat.

E. Stay comfortable -- add clothing insulation as needed. Loose fitting clothing in layers creates dead air space insulation. Shelter the head and neck. Close all clothing openings. Put on windproof and rainproof clothing to minimize wetness and body heat loss.

F. Nibble food and drink.

1. Drink hot liquids. Get artificial heat - fire if possible.
2. Nibble on food to resupply energy.
3. If food is not available, conserve what energy you have.

G. Stay put. Don't fight a storm.

1. If visibility is obscured, don't travel.
2. Shelter is a primary need.
3. Most storms are of short duration.

H. Tips:

1. Prewarm inhaled air by breathing through a wool cloth or scarf.
2. Sit and stand on thick insulation.
3. Stay dry. Don't sweat.

4. When traveling or working, watch for signs of stumbling, poor reflexes, numb attitude. They indicate exhaustion -- and exhaustion can be 30 minutes from death.
5. Watch for equipment damage by cold. Protect fuel and water supply -- keep stored water from freezing.
6. If skin is numb, watch for frostbite.
7. Improvise mittens, overboots, and body insulation. Pioneers have survived severe storms wearing bark from trees.

If you are going to hole up in a snow cave, remember you must have enough energy to shiver for warmth for the duration of the storm.

When an individual or party is threatened by cold and exhaustion in an exposed situation, they must consider that improvising shelter and keeping sufficiently warm in it may require more energy than making slow, steady progress toward more hospitable environment.

Reasoning: It keeps morale high because you are trying to improve your circumstances. It takes less energy to walk than to shiver. Walking may create enough body heat to sustain life. Any situation improvement lessens the threat to life.

"BY NATURE'S RULES"
A very good film on the effects of cold. All outdoor clubs should see it. If you show it to your class, invite the whole school to view it.

16mm color, sound. 28 min.

Available from rentals or from any SAFECO INSURANCE AGENT

BEST COPY AVAILABLE

PHASE II CHAPTER 3

CLASSROOM ACTIVITIES WITH COLD

1. List layers of clothing. Evaluate quality and insulation value.
2. Experiment with natural, man-made, and plant fabrics. Compare and evaluate results of getting water on them (wicking, drying time, temperature).
3. List types of insulation in the classroom. Compare values against wetness, cold, and wind. Which is the best insulator?
4. Open windows. Note difference in temperature using wet and dry thermometer.
5. Acquire two gloves or mittens (preferably cotton). Get one wet, leave the other dry. With one on each hand, swing arms to create wind. Evaluate result.
6. Set up imaginary survival problem with students dressed as they are.
7. List and evaluate available schoolyard shelters.
8. List and evaluate materials that would provide building materials for shelter.
9. Use the survival experiments on page 166 in WILDERNESS EMERGENCY.
10. List ways man purchases services to provide protection from the cold.
11. List ways these services could fail or be destroyed. What could we substitute for them?

FIELD ACTIVITIES - EFFECTS OF COLD ON THE HUMAN BODY

1. Take the group on a field trip; let them find the best place to hold a 30-minute lecture. Evaluate their selection for exposure to weather. Would it be good for other seasons of the year?
2. Find running water, if possible. Submerge one arm for two minutes. Note the cooling effect of the water. Remove arm from water and watch it return to normal.
3. Have students bring old fabrics to wet in the water. Hang them on a branch of a tree. Test them later to feel the drying action (30 min., 1 hour, 2 hours). Compare fabrics. Which would you like to have on if you were wet? Evaluate the fabrics for other seasons (hot, cold, or wind).
4. Search for overnight shelter. Evaluate for expected weather conditions. Evaluate it for other hostile weather conditions.

PHASE II CHAPTER 4

EFFECT OF HEAT ON THE HUMAN BODY

OBJECTIVE: Each student will understand that his body is a delicately balanced heat producing machine, cooled by evaporation of perspiration (water) on the skin, and that certain adverse weather elements and some body functions will cause excessive heat gains that may threaten life.

DESIRED UNDERSTANDING:

1. Heat is more dangerous than cold as a threat to the human body. Body water coolant is very limited.
2. The human body is a heat producing machine. Working in a hot environment will threaten the circulatory system, body's water level, chemical level, and the mental power.
3. Body heat gain in any form causes change in blood volume/capacity ratio, which affects total body.
4. Naturally hot environments, devoid of water, are generally devoid of civilization.
5. Heat will be absorbed by the body any time temperature is above 98.6° F.
6. Protection from heat gain can and must be improvised.
7. Sunburn is very dangerous to body cooling principles.
8. Understand the five major heat gain principles and recognize the symptoms that indicate heat gain.
9. Excessive heat gain will affect the priorities of life and survival.
10. Be aware of the many forms of heat gain that can be harmful.

Instructor - Find out how many of your students have suffered sunburns - or visited a very hot desert during a vacation.

Resource: WILDERNESS EMERGENCY, Chapters 3, 8, 9

I. Why heat is dangerous:

A. The body is a self-regulating, heat producing machine that operates best at a nearly constant temperature.

B. The body has an automatic cooling system that reacts to heat gain of 1/10 of 1 degree F.

C. The body has a limited supply of water for cooling.

D. Muscle use can produce excessive heat, and when combined with a hot environment can cause failure of the cooling system.

E. The first defense against heat gain within the body is sweating. Part of the blood flow is diverted next to the skin for cooling.

F. Flow of blood next to the skin disrupts the volume/capacity ratio of the closed hydraulic circulatory system.

G. Reduced muscle activity, shelter, and water input are mandatory to survive extreme heat. Often these are not easy to find or do.

H. A person gaining heat must do everything possible to reverse this trend.

I. Mechanized vehicles can carry a person so far from civilization that they cannot walk back alive from unexpected emergencies.

II. How heat harms the body:

A. Heat gain in any form increases the total burden on the body.

B. Excess heat will seriously affect the regulatory processes, body water supply, and thinking processes.

C. Living cells need a nearly constant temperature of 98.6° F. to produce the energies of life. Heat gain causes this process to slow down. Muscular activity produces heat; and when combined with a hot environment can threaten the priorities of life and survival.

D. Air humidity and air movement can alter the cooling effectiveness of evaporation.

E. Extreme heat causes a change in blood circulation, which reduces the volume of blood returning to the heart. This condition can precipitate or aggravate heart problems.

F. Profuse sweating increases salt loss, upsetting body chemistry.

G. Other heat dangers:

1. Sunburn
2. Equipment failure

3. Lack of water supply
4. Sun blindness
5. Loss of muscle strength

III. When to protect the body from heat:

A. Any time your body is in a hot environment. The human body gains heat from the environment by:

1. Conduction/absorption - touching anything warmer than 98.6° F.
2. Radiation/absorption - sun, fire, warmth from other bodies.
3. Reflection/absorption - from water, sand, metal, snow, concrete, rock, etc.
4. Convection/absorption - hot wind or lack of wind.
5. Dehydration - loss of water to cool the body.

B. Any time you sweat profusely. Body salt loss is increased by sweating.

C. Any time redness of the skin indicates overexposure. Remember also to protect the eyes from prolonged exposure to bright sunlight.

D. Any time you are in or near a desert area, or away from immediate shelter and water supply.

E. Any time the body symptoms indicate dehydration.

IV. Improvising a defense against heat gain: Heat is a dangerous threat to life. You must provide protection from heat any way you can.

A. Slow down muscle heat production at the first sign of a heat problem.

B. Seek shade shelter, and rest during the hot part of the day.

C. Cool the skin with wet cloth, if possible.

D. Drink water when thirsty. Do not ration it.

E. Avoid environments or situations where overheating will occur:

1. Closed room - no ventilation, too many warm bodied people.
2. Over-clothed person - air flow restricted.
3. Snow covered valley - no wind, and in direct sunlight.
4. Still air canyons (cities of concrete) - reflected and direct sunlight.
5. Closed vehicles - metal absorbs heat rapidly.
6. Desert or arid places - devoid of trees, water, people, usable materials.

G. Insulate yourself from the hot ground.

H. Live like the animals. Dig in under the sand; dig down to cooler sand; improvise shade; work slowly to minimize heat gain.

I. Stay with vehicle. Travel as a last resort.

J. Reason out actions. Think - your best survival tool is your brain.

V. How to combat the effect of heat:

A. If in a confined space, get out.

B. If in a still air canyon, climb to the ridge.

C. If in a crowded room - leave it.

D. If you are over-clothed, ventilate.

E. If you are too close to heat, move back or set up a heat deflector.

F. If you are sunburning - cover up or get in the shade.

G. Drink more water than normal.

H. Wear a hat - preferably with a ventilated crown.

VI. Staying alive in an extreme heat emergency:

A. First stage

1. Get out of direct sunlight into shade.

2. Analyze approximate length of emergency and chance of assistance.

3. Analyze immediate dangers:

a. Intensity of heat - time of day
b. Environmental hazards
c. Distance to water - amount of remaining energy.

4. Analyze resources:

a. Available water, food, clothing, shelter.
b. Emergency equipment - medicine, signals, transportation.

5. Stop and minimize all muscle action during intense heat period.

6. Cover the body with loose, lightweight cotton clothing, especially the neck and head.

B. Second stage

1. Stay in shade, if possible. Get up off the hot ground.

2. Drink when thirsty - don't ration water supply.

3. Don't eat - it increases water requirement.

4. Stay salty (intake of salt to balance loss by perspiration). Take salt only if there is water to drink with it.

5. Keep the mouth shut, minimize talk. Tongue may swell. Swallow occasionally to keep the throat moist.

6. Analyze what the heat is doing to your body, then do everything possible to minimize its destructive forces.

7. Improve your retention of body water. Do not remove clothing, as clothing helps prevent dehydration from hot wind or burning sun.

8. Wear dark glasses or improvise eye protection.

9. Don't travel across country - unless absolutely necessary. You will get only 10 miles to the gallon of water.

10. Work or walk slowly - rest often.

11. Watch for symptoms of any of the heat problems - especially in older persons.

12. Travel in evening if possible - nights may be cool to cold.

CLASSROOM ACTIVITIES WITH HEAT

1. List clothing values for use on desert. Evaluate color and air transfer.
2. List hot environments in which you have been.
3. List the heat insulation values of materials found around school. Compare values of heat absorption.
4. Use a heat lamp to show how metal, wood, paper, etc., absorb heat.
5. Note perspiration on some students after playground games. Why is it there?
6. Use water can demonstration to show heat gain (Appendix VIII of Surviving the Unexpected.
7. List and test sources of natural running water near school yard.
8. How could you get water in the city if the water supply were destroyed?
9. List foods that require the most water to be taken with them (cereals, crackers, etc., vs. fruits).
10. Set up imaginary desert problem with students dressed as they are. How would they carry water?
11. How could you signal distress in desert sunlight? How at night?

HEAT ACTIVITIES DURING FIELD TRIPS

1. Stop students in sunshine, facing the sun. Talk about the effects of heat for five minutes. Then move to shade to emphasize contrast.
2. Look for drinking water, vital to life. You need two quarts every day.
3. Look for shade-type shelters, material to build shelters.
4. What do animals do to beat the heat? Lie in shade, rest.
5. Wrap a person in plastic (except face) and place in direct sunlight. He will perspire very quickly. (Don't let his face get red.)
6. Take a trip to a desert area. Note plant and animal life. Where is the water for survival? Explain plants dying from lack of water. Why are some living? (root structure, leaves, and stems). Explore ways to conserve water.

PHASE II CHAPTER 5

IMPROVISING WILDERNESS NEEDS

OBJECTIVE: Each student will understand that in any emergency he can and must improvise his basic needs, from the material available, both natural and man-made.

DESIRED UNDERSTANDING:

1. The priorities of life and survival determine the immediate requirements.
2. A protective shelter is anything that protects the body from the elements.
3. The weather elements and terrain dictate the type of shelter necessary.
4. A fire needs air, fuel, and heat to start and to burn.
5. In signalling, contrast is the key.
6. To survive you may have to make tools like a cave man, dig in and sleep like an animal, and forage like a scavenger for food and water.
7. In surviving the unexpected, you alone are the master of your destiny.

Instructor - Ask the class to empty their pockets and purses. Quickly pass by them evaluating the items for usefulness in improvising.

I. What to improvise in the wilderness:

A. Whatever you need to solve the problem of staying alive long enough to get out of your predicament.

B. Whatever you need to provide the basic necessities of life and fulfill the priorities of life and survival.

C. Whatever you need to combat the body's enemies and bolster self-confidence.

D. Survival is problem solving, requiring a mental capacity to reason, analyze, and compare, plus the determination to succeed.

E. Once you have determined a need, satisfy that need any way ethically possible.

F. Fire can dry clothing and provide warmth and comfort; but to build and maintain a fire often requires exposing the body to rain and wind.

Resource: WILDERNESS EMERGENCY, Chapters 7, 8, 9

G. Fire is not necessary. A small, dry, almost airtight shelter can be heated with body heat radiation.

II. Improvising -- the art of problem solving:

A. Try to discover or anticipate your needs.

Remove the eyeglasses from someone who is farsighted. Have them find a location on a topographical map.

B. When you determine that you have a need - think!

Show them how to improvise eyeglasses to read fine print. (Punch a needle hole in paper to help prefocus the eye pupil

1. What will satisfy that need?
2. What does it do?
3. How does it do it?
4. What does it look like?
5. Could it be made of different materials?
6. How was it constructed?
7. How can it be constructed from the materials at hand?

C. Look around.

1. Mentally make a list of everything in the area which might be useful.

   a. Man-made things, which include fabric, metal, leather, rubber, string.

   b. Natural materials

      (1) Stone, wood, sand, vines
      (2) Water, vegetation, tree sap

2. Check your pockets and clothes. You might have keys, coins, paper, money, belt buckle, watch, shoes, laces, string, knife, etc.

3. You will discover more than you expected.

   a. Don't overlook anything. Discard nothing.
   b. Don't ignore anything because you think it is not useful.
   c. Make a search of the area.

D. Adapt what you have to your needs.

1. Think -- you have a lot to work with.

   a. Recall how this need was satisfied before.

b. Use your imagination to devise a substitute.
c. Brainstorm until you come up with a solution.
d. Don't give up until you have a solution.
e. Make the article, solve the problem, or satisfy the need.
f. Make modifications and improvements.
g. Experiment, use the imagination.

2. Failures

a. Expect failures and false starts.
b. Don't be discouraged, don't give up.
c. Beware of anger generated by failure; it can cause irrational behavior.

3. Remember - your best survival tool is your brain.

III. Improvising body shelter: A body shelter is anything which can be used to protect the body from harmful forces.

A. Shelters we use in our artificial environment:

1. House
2. Car
3. Clothing
4. Office
5. Stores
6. Buddies (windbreaks)

B. Shelter in an emergency situation:

1. Think. How was the artificial shelter constructed?
2. What do you have in the area to work with?
3. What did you bring with you that you can work with?
4. Make shelter complete with protection from animals and loss of body heat.

C. In a natural environment you could need shelter from:

1. Snow	4. Heat	7. Insects
2. Rain	5. Sun	8. Animals
3. Cold	6. Wind	9. Lightning

D. When building a shelter, remember its purpose -- to protect you.

E. Shelter should be located carefully, away from:

1. Avalanche areas
2. Falling rock
3. Insects
4. Swamps
5. Dead trees, snags
6. Water runoff, dry streambeds
7. Colder areas (unless to combat heat)
8. Ridges (wind)

F. The shelter should be close to:

1. Water
2. Firewood
3. Natural windbreaks and protected areas.
4. Open signalling area

G. When constructing a shelter, always remember to weigh energy use against energy loss or gain.

H. Types of emergency shelters:

1. Arctic or cold environment -- The shelter should be just big enough to get into (trench, snow cave, igloo, tree pit shelter).

2. Wooded areas or wilderness -- (under downed logs, cave, hollow log, bark shelter, or burrow dug into the soil).

3. Desert or hot environment -- Make shade or burrow into the sand -- the temperature can be as much as 30 degrees cooler just 18 inches above or below the sand surface. (Don't overwork, conserve sweat.)

4. On water -- Protect the body from wind and spray. Shade is a must. Stay covered up. Sun will burn, cook, and blind.

I. Equipment: (prepare for the worst)

1. Plastic, paper, cardboard as shelters
2. Wool clothing - holds body heat when wet.
3. Cotton clothing - cooler - retains water.
4. Blankets and sheets as shelter
5. Car, boat, plane as shelters

IV. Improvising warmth in an emergency:

A. Maintain human body warmth - protect it in any way possible.

1. Fabric of any kind.
2. Insulation of any type.
3. Wind protection of any type.
4. Sunshine or artificial heat
5. Human body heat or animal heat (bundling).

B. Artificial heat

1. Mechanical heaters
2. Reflected heat
3. Radiated heat
4. Fire

V. Fire building:

A. Fire has many uses.

1. Warmth
2. Signalling
3. Drying
4. Light
5. Cooking
6. Morale

B. Fire dangers in the wilderness -- Controlled fire is man's friend and provider, but uncontrolled fire destroys all living things. You cannot outrun a forest fire or grass fire.

1. Pick a safe area.

a. Away from overhangs or snowcovered limbs
b. Away from highly flammable materials
c. Near a source of fuel (wood, dry dung, etc.)

2. Prepare a proper area. Scratch down to mineral soil. (Mineral soil is dirt with no duff or roots.)

3. Decide: do you need a fire? Think about the dangers, the need, and the energy required to build and maintain a fire.

4. Smell the air. If it is resiny (smells like pitch) or extremely dry, DON'T build a fire.

C. Building the fire

1. Gather all materials beforehand. Keep them dry until ready for use (cover with bark slab, plastic, etc.).

2. Make three plentiful and separate piles.

   a. Tinder -- extremely flammable material, for initial flame. (Pitch, dry grasses, lint, cedar bark, wood shavings, oil, hair, steel wool, match head, toilet paper, etc.)

   b. Kindling -- Something that will ignite easily from the flame.
      (1) Candle, or oil with a wick (cotton shirt tail).
      (2) Pitch wood (undecayed spires on old stumps).
      (3) Squaw wood (small dead twigs from trees)
      (4) Indian kerosene (red needles on evergreen trees)
      (5) Dry wood pulverized by beating with a rock.

   c. Fuel - wood which will not burn readily from the initial flame.
      (1) Squaw wood (large)
      (2) Dead wood
      (3) Charred wood
      (4) Tires, rubber, plastic
      (5) Bark will burn on an already hot fire.
      (6) Green or wet wood is difficult to burn unless partially dried.

3. Fire triangle - Oxygen, heat, and fuel. All three are necessary to start and keep a fire going.

4. Starting the fire

   a. Need source of heat.
      (1) Match
      (2) Flint and steel
      (3) Friction
      (4) Battery sparks
      (5) Magnifying lens

   b. After initial flame, feed it slowly.
      (1) Candle
      (2) Kindling

   c. Progress from kindling to larger fuel.
      (1) Small sticks
      (2) Branches
      (3) Logs

D. Types of fires:

1. Teepee type (easiest when starting a fire)

   a. Tinder in bottom center.

2. Trench fire for high wind.

E. Size of fire:

1. Indian fire (small) - "Keeps you warm by the fire."
2. White man's fire (large) - "Keeps you warm running for firewood."

F. Firecraft:

1. Platform for snow or wet ground.

a. Green logs
b. Rocks

2. Avoid using rocks in or near a fire if they were found in or near water; moisture trapped inside may explode the rock when heated.

G. Putting the fire out:

1. Mix enough water and dirt to make a mud pie to put over the fire --this way there is no heat or steam.

2. Pour water on mud pie, then stir with a stick.

3. Feel fire bed. Do not leave until cool to touch.

VI. Signalling in the wilderness: To be found or to receive help you must make yourself visible or heard by others. For example, can you see that ant in the grass? You could if he were using any of the following signals.

A. Contrast - the key to effective signalling

1. This makes you appear larger than you are.
2. The object is to change the surroundings to such a degree that it is noticeable from a distance.

B. Signal area:

1. In a clearing is best.
2. Trees dissipate smoke and make it difficult for others to spot your signal.
3. Try to make the signal seen from all directions.

C. Types of signals:

1. Fire

a. Smoke by day and flame by night
b. Three fires in an equilateral triangle is best
c. Have all materials handy for fast starting signal when a plane or search party is heard.
d. White smoke for contrast against dark soil or green vegetation.
e. Black smoke against snow or light background.
f. The hotter the fire, the higher the smoke will rise.

2. Ground-to-air

a. SOS is best, but requires much energy.
b. Letter X is good (straight lines are not common in nature).
c. Make letters as big as possible.

3. Audible

a. Three gunshots or whistles in a row.
b. Three of any loud noise (horn, banging hubcaps, beating a limb against a hollow log) - repeated at well-spaced intervals.

4. Other visual signals

a. Mirrors

(1) Rear view mirror
(2) Compact mirror
(3) Ordinary glass pane
(4) Shiny or polished metal

PRACTICE IS ESSENTIAL IN SIGNALLING WITH A MIRROR. Normally you have only a few seconds of effectiveness when aiming at a search plane.

b. Colorful flags (underclothes, white, red, yellow) - wave or move them.

c. Arrows indicating direction of travel.

VII. Travel:

A. Many survival situations do not require travel. Stay put and conserve energy -- build shelter, fire, signal.

B. Common sense must rule all travel. Only you can determine your needs and procurement problems.

C. If you determine to travel --

1. Take everything possible to help you (signal, food, water).
2. Stay dry, stay warm.
3. Stay on predetermined direction (use map and compass). Blaze your route or mark it.
4. Travel slowly and camp early near water and open area.
5. Travel route of least resistance to conserve energy.

D. Caution is the "watch word" in survival travel

1. Every action must be safe.
2. Every action must contribute to bettering your situation.
3. Any injury can complicate your situation.

VIII. Improvising Navigational Aids

A. The difference between the familiar area and the unfamiliar is the time you take to observe, hear, and feel the area.

1. Mental maps are put in the brain by seeing, hearing, and feeling.
2. Mental maps are pictures stored in the brain's reticular system.
3. In unfamiliar areas travel slowly, observe everything in all directions. Concentrate on the unique and unusual configurations of nature.

B. Before traveling, establish reference points and compass direction.

1. Determine reference point direction N, E, S, W.
2. A baseline is any unmistakable natural feature which runs along one entire boundary of your travel area.
3. Change reference points and baseline when you lose capability of observing your first established reference.

C. Nature can provide directional aids.

1. Vegetation grows toward the sun.
   a. Tree foliage denser, flowers on South side.
   b. Growth rings tend to be wider on side toward the sun.
2. Sun melts snow faster on South or windward side.

3. Prevailing wind (not localized wind caused by obstructions)
   a. Effect on grass and trees.
   b. Waves, dunes, rain slant, clouds, dust indicate wind direction.
   c. Body senses, feeling wind, cold or heat.

4. Solar System - Sun, stars, moon
   a. Shadows, moist areas on trees
   b. Heat on face or body
   c. Shadow stick compass

5. Natural objects
   a. High points, peaks, mountain ranges, valleys, etc.
   b. Stream flow (if source and outlet known)
   c. Waves, dunes, cornices, erosion.

6. Most popular use
   a. Animal trails to water
   b. Wear indicators (roads, oil slick, ruts, etc.)
   c. Sounds, smells, and vegetation growth retarded.

D. Artificial Directional Aids

1. Houses and buildings
   a. Survey plots generally on compass points
   b. Flowers, awnings, gardens on sunny side.
   c. Weathered side (wind and sun)
   d. Television antennas point to transmitter.

2. Towers and high buildings
   a. Power lines, micro wave relay stations
   b. Water towers, windmills, etc.

3. Fence lines are generally set on true compass bearings.

E. Improvising a compass

1. Needle floating on a leaf, or paper, in quiet pool or glass tray.
2. Shadow stick compass
3. Watch

F. Observation - Eyes and mind most valuable tools.
Improvising maps and directional aids depends upon the individual's ability to see the objects (fog, storm, etc.) and to comprehend (recognize) and analyze the forms or objects he views.

PHASE II CHAPTER 5

FIELD ACTIVITIES - IMPROVISING WILDERNESS NEEDS

Take the group for a short, one-or-two-hour hike in an outdoor wooded area.

1. Look for edible wild food.

   a. Explain necessity for fire, water, cooking pot; necessity of time to test for poison.
   b. Danger of poisonous foods.
   c. Waste of energy to get unnecessary food. A handful of low-calorie herbage does not replace energy expended in gathering it.
   d. Necessity for book on wild foods for every area you visit.

2. If you find a short hillside on the hike, run the group up the hill.

   a. Explain increase of heart, lung activity.
   b. Discuss why stomach hurts, if right after a big lunch.
   c. Discuss why legs ache (carbon dioxide and lack of fresh fuel, lactic acid build-up).
   d. Note how hypothalmus returns the body to normal quickly - usually within three or four minutes.

3. Point out how animals conserve energy going uphill. How should humans travel up a hill? The group can follow a game trail to verify animal intelligence.

4. Look for possible shelters.

   a. Discuss possible locations - under logs, beside stumps, caves, natural depressions.
   b. Point out valuable material overlooked by group - boughs, insulation material, building material.
   c. Explain good points of shelter - effect of rain, effect of wind direction.

5. Discuss ways of improving shelters.

   a. Sleep like the animals do. In an overnight stay you will be there approximately 10 to 12 hours. How deep a burrow can you make in 12 hours? Scrape out with a limb; dig with a spoon or cup. Improving your shelter helps keep your mind busy and saves body heat through improving shelter.

   b. Point out possible changes, using different materials: wood, limbs, bark, stones, etc.

6. Find material for firebuilding.

   a. Find pitch wood.
   b. Show a shaved stick made with a jackknife.
   c. What other tools may be substituted for a knife? (Rock.)
   d. Point out other possible dry wood.
   e. Show the other fuels available without axes or saws.

7. Have students try to light small starter fire - with only two matches.

8. Point out value of observation.

   a. Find out how many know direction back to camp.
   b. Which way is North?
   c. Find your exact position on two or three types of maps.
   d. Point out necessity of keeping a running observation (mental map) of your travels.

9. If weather is inclement -

   a. Explain why some are wet to the skin while others are dry.
   b. Put plastic shelter, leaf or garbage bag on cold persons; observe their improvement.
   c. Explain what is happening to the body - how some could improve their body protection and heat retention capability (bundling), shelter selection.

10. Demonstrate signaling.

    a. Smoke
    b. Color of clothing
    c. Visibility
    d. Using sound.

Many survival experiments are noted in WILDERNESS EMERGENCY page 166.

Since so much of survival will be improvising by using basic physics, the instructor should challenge the students to search for other tests and experiments that use the principles of insulation, conduction, convection, or evaporation.

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PHASE II

LESSON PLAN OUTLINE FOR WILDERNESS SURVIVAL

I. DETERMINING FEARS ASSOCIATED WITH A PARTICULAR SITUATION:

Task A (10 minutes) Work by yourself.

List the fears you might have if you were to spend an entire night in the wilderness alone. The only equipment you have is the equipment you are carrying right now.

Questions and Discussion (10 minutes)

1. What is controlling these fears?
2. Would you have them in the city?
3. How can you calm the fears?
4. Is it your imagination or are these real fears that you must be concerned with?

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Task B (5 minutes) Work in groups of 2 or 3

List the fears you would have if all of you were to spend a night in the wilderness together.

Questions and Discussion (5 minutes)

1. Did you have the same fears as a group that you did alone?
2. Why did the extra companions make a difference?
3. Do you get these fears in the daylight? Why not?
4. What are the disadvantages of panic?

PHASE II

II. ENERGY LOSS IN THE WILDERNESS

Task C (5 minutes) Work by yourself or in a group.

List the ways the human can gain energy.

Task D (5 minutes) Work by yourself or in a group.

List the ways the human body can lose energy.

Questions and Discussion (10 minutes)

1. What does the body need to produce energy?
2. How does the body use energy?
3. What determines the body's energy supply?
4. What happens when you run out of energy?

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Task E (10 minutes) Work by yourself or in a group.

The human body operates much like an automobile. List the ways the human body is similar to an automobile.

Questions and Discussion (10 minutes)

1. What are the ways the automobile is similar to the human body?
2. What is the one important difference?
3. If you are in a survival situation, what is the secret of maintaining body energy?
4. What are the rules of conserving energy?

PHASE II

III. EFFECTS OF COLD ON THE HUMAN BODY:

Task F (15 minutes) Work in groups.

Sit down in a shaded spot, take off your coat, and feel the effects of nature. List the reasons you are getting cooler.

Questions and Discussion (10 minutes)

1. What did you do to keep from getting cooler?
2. Why did you get cooler?
3. How could you warm your body?
4. What are the five ways the human body transfers heat?
5. How does cold harm the body?

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Task G (5 minutes) Work by yourself.

Submerge one arm in cool water for about two minutes. Remove arm from water and observe it return to normal.

Questions and Discussion (10 minutes)

1. Why did your arm get so cold?
2. What if your whole body got wet?
3. What would happen if a sudden drenching rain storm hit?
4. What could you do to protect yourself from getting wet?
5. Why is it so important to stay dry and protect your body temperature?

PHASE II

IV. IMPROVISING WILDERNESS NEEDS:

Task H (5 minutes) Work in groups of 2 or 3.

You are in a survival situation. You must spend the night in the wilderness. It is one hour before dark, and a storm is approaching. In writing, tell what your plans will be for the next hour.

Questions and Discussion (10 minutes)

1. What is everyone going to do?
2. What are the problems facing you?
3. What material do you have to work with?
4. If you are going to build a shelter, what are the structural features you should be concerned with?

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Task I (10 minutes) Work in groups of 2 or 3.

Locate or build a shelter for the night ahead.
(Note: If you are in an area of heavy use, do not have the students build the shelters. Just have them locate a possible shelter and then describe what they would do.)

Questions and Discussion (10 minutes)

1. Will your shelter offer protection from wind, rain, and the cold?
2. Will you be able to stay warm without a fire?
3. What are some of the different types of shelters you would use in different seasons?

PHASE II

Task J (10 minutes) Work in groups of 2 or 3.

You have two matches. Try to start a fire. Use only the material from your natural environment.
(Note: Make sure the area is safe for fire building.)

Questions and Discussion (10 minutes)

1. What are the three things necessary to start and keep a fire going?
2. What are the steps to building a fire?
3. What are the different ways to start a fire?
4. Do you need a large fire? What is the difference between an "Indian fire" and a sportsman's fire?
5. How do you put a fire out?

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V. SIGNALLING IN THE WILDERNESS

Task K (5 minutes) Work in groups of 3 or more.

Make a signal that could be seen from a search plane that is flying over looking for you. Make sure the signal is big enough so it can be easily seen from the plane.

Questions and Discussion (10 minutes)

1. Contrast is the key to successful signals.
2. Can you see that ant in the grass? Could you if he were signalling?
3. Where is it best to signal?
4. What are some types of signals?

PHASE II

SAMPLE FIELD WORK TASK CARDS

Task A (10 minutes) Work by yourself.

List the fears you might have if you were to spend an entire night in the wilderness alone. The only equipment you have is the equipment you are carrying right now.

Task Card and Work Problem portions of this Guide are reprintable courtesy of SURVIVAL EDUCATION ASSN.

Task B (5 minutes) Work in groups of 2 or 3.

List the fears you would have if all of you were to spend a night in the wilderness together.

INTRODUCTION TO PHASE III

COPING WITH NATURAL DISASTER

We now live in a modern technological society that has evolved from living with and from Mother Nature (pioneers) to one that attempts to control her. Progress within the service industries and government continues to forge ahead with plans to make everything safe for everybody. Until they succeed, man will still have to provide for life's necessities during adversity. Natural disasters and catastrophies, because of their powers of devastation, have become the main threat to our technology. The power of moving air, water, or earth can disrupt or destroy the energy flow, communications, and transportation that are basic ingredients of modern technology. Destroying the life support systems of a city causes the city to become a wilderness. City people without money, heat, lights, water, food, communications, or transportation will probably resort to living like cave men, foraging for their needs amid the rubble of what is left of their modern city.

Historically, there have been major natural disasters throughout the world, and our governmental agencies have studied the problems and possible solutions. They will respond with all possible assistance, as soon as possible. But, logistically, they cannot be in all places at all times. We just hope natural disasters are small ones, unlike those of ancient times where whole countries or continents felt the harsh hand of Mother Nature.

WHY NATURAL DISASTER EDUCATION: Our affluent society enjoys more leisure time and fast mobility than any other society in history. For example, you can sleep through a blizzard in the Rocky Mountains, have a flat tire in the desert, eat lunch in a lightning storm, and travel thru the tornado belt and sleep that night in the hurricane zone. If you travel the other direction you could go through a blizzard, a desert, a dust storm, flash flood, lightning storm, and sleep over a fault in the earth or on a flood plain. Such fast travel necessitates a special awareness education of the rules for staying alive through all of the natural disasters.

Some points pertinent to survival in natural disasters:

Transportation: The power of moving air, water, and earth may destroy roads and bridges, or make them impossible with debris. Such disruption necessitates a change in habits, attitudes and values. Time and distance must be recalculated from the automobile to foot travel.

Navigation: When the normal means and avenues of transportation are disrupted by Nature's fury, our principle mode of navigation is also lost. When we start detouring or walking around obstacles, the road and mental maps we use daily are obsolete. In unfamiliar land we must make it familiar with cautious observation and detailed mental maps. This may be easy for the farm boy but not for the city dweller who has relied upon the now non-existent street signs.

Communications: When a city becomes a wilderness, our normal use of telephones to gain instant relief will be impossible. People will have to be their own doctors, repairmen, postmen, and entertainers. This may have devastating effects on the habits, attitudes, and morale of a society accustomed to plenty.

Utilities: Loss of water flowing from the tap will necessitate a whole new life style and habit reorientation. Loss of electricity will be the most serious event. This will create a change of living habits and affect the society as a whole, because of the total disruption of the job for pay system, banking system, and economy.

All other utilities will be affected by the disaster. It is a chain reaction, each affecting the other down the chain until it reaches you, the user.

Services: The normal service industry we enjoy today, from the food store to the shoe man, will be affected by the disaster's chain of shutdowns.

Many services are such that we can do without them temporarily (cleaners, tavern, department store), but food is of primary importance. Few Americans in the cities have enough staples on their shelves to withstand a week-long store closure. Also, the urban society now lives outside of the walking radius of food supply. This requires vehicular travel. Of course the city could plant the parking strips, lawns, and vacant lots with food. But not in the middle of winter. It takes time for plants to produce any benefits to the diet.

Governmental Response: As we live today, help is as near as the telephone. Police, firemen, doctors, repairmen, and a host of governmental agencies will respond to our needs. In a major natural disaster it might be advisable to consider that their response capability is limited to

1. Their availability for duty,
2. Communications and your ability to inform them,
3. Transportation, accessibility, and road conditions,
4. Government personnel are having their immediate personal emergencies, like you are.
5. A ready supply of the materials needed.

Undoubtedly, the governmental agencies will respond with what they have when they can get to you. That's why Time Lag is known as your time to live on your own.

PHASE III CHAPTER 1

COPING WITH NATURAL DISASTERS

OBJECTIVE: To study the potential fury and threat to life of the natural elements - air, water, earth, and fire.

DESIRED UNDERSTANDING:

1. Natural elements (air, water, earth, fire) are necessities of life.
2. Natural elements have unparalleled power during storms.
3. Man can and must act to defend himself against this natural enemy.
4. Man can recognize and prepare for some natural disasters.
5. Some natural disasters give little or no warning.
6. Controlled fire is man's friend and provider; but uncontrolled fire destroys all living things.
7. Natural storms generally are of short duration.
8. Normal modern services may not be available during and after a disaster.
9. Natural disaster will somehow affect the priorities of life and survival whenever they occur.

Instructor - List a few of the local disasters that have occurred. Use newspaper stories or listen to a student's experience.

Resource: Civil Defense pamphlets on related subjects.

I. Air in Violent Motion:

A. Tornadoes - Strongest and briefest storms.

1. Understand what causes a tornado.
2. Understand why it endangers life.

   Rotating, violent wind that twists and tears, destroying shelter and hurling debris.

3. Warning - Usually radio, T.V., voice from civil authorities. Warning period will be very brief; act immediately.
4. Defensive action to be taken:

   a. Look southwest. If you see the tornado it generally is coming your way.

b. Select shelter inside a sturdy building (basement or inner hallway).

(1) Stay away from windows, beware of flying debris.
(2) Extinguish all fires, shut off all fuel and electric power.
(3) Open windows to equalize pressure.
(4) Stay out of big-roofed buildings (barns, gyms, etc.).

c. If caught outside or in auto

(1) Try to get to a sturdy building or drive away at right angle to the funnel.
(2) Get out of auto, mobile home, camper, etc., because the wind will pick them up.
(3) Seek a ditch (or road culvert), lie down flat if possible.

B. Hurricanes - Intensive rotating storms, covering a large area for a long time.

1. Understand what causes a hurricane.

2. Understand how they destroy - wind and rain.

3. Warning - Usually radio and T.V. (weather bureau and civil authorities). Some visual or voice. Possibly several hours or a day or two to prepare.

4. Defensive action to be taken:

a. Leave low-lying areas near water.
b. Prepare for loss of service industry (gas, oil, water, food).
c. Secure loose equipment and board windows.
d. Do not leave the protection of a sturdy house - unless in low-lying area.
e. Consider - fire, loose electrical wires, flood and damaged roads, pestilence, epidemics, and looting by others.

II. Water in Violent Motion:

A. Floods - Uncontrolled moving water.

1. Most floods can be predicted or anticipated.

2. Flash floods can happen (gain high ground immediately).

The Dept. of Emergency Preparedness has many films and booklets that show the cause and effects of natural disasters and storms. Contact your local office of Civil Defense or Emergency Services.

3. Evacuate to high ground, where there is no danger of being cut off from civilization.

4. Plan to be without electricity, water, food and supplies for an undetermined length of time.

5. Bring inside all loose items. Store on upper floors if possible.

6. After flood recedes:

   a. Do not touch loose wires or handle electrical appliances.
   b. Check food and water for virus contamination.

B. Tidal Wave:

1. Understand what causes tidal waves.

2. Understand the power of a wave of water.

3. Water damage is usually much greater than wind damage.

4. Warnings - Usually radio, T.V., or voice.

5. Defensive action:

   a. Leave shore and low lands.
   b. Evacuate possessions if you have time.
   c. Treat disaster as you would a hurricane.

III. Earthquake - Earth in Motion. (Violent shaking movement of the earth)

A. Understand the usual causes of earthquakes and after shock.

B. Know the geological status of your area and areas you may visit.

C. How earthquakes destroy and how they endanger life.

1. Sudden approach - they just happen.

2. No preparation - except for after shock.

3. They destroy buildings, roads, service industry.

4. They cause fires, cause people to panic.

D. Warnings - none.

E. Defensive actions:

1. Inside buildings:

a. Stay there - get under strong table or desk, or under doorway of inside wall.
b. Sit down, pull up knees and cover head with arms to protect from flying or falling objects.
c. Combat the urge to run; it will only lead to panic.
d. If air becomes contaminated with gas or smoke, get down next to the floor .
e. Wait until major shaking subsides, then leave for open area away from wires. Move to safe area quickly but cautiously.

2. Outside the building:

a. City streets are very dangerous (gas, electrical wires, falling objects, etc.).
b. Get inside building if possible.
c. Stay away from glass windows, masonry walls, balconies, signs, shelves, and displays.
d. If a wall crumbles, move away.
e. Keep away from electrical power lines, gas lines, water lines.
f. Look up; greatest danger is falling objects - and panic.

3. After-shock:

a. After-shock will do additional damage and upset morale.
b. Waiting for the after-shock can be demoralizing. Try to protect self and be a calming influence on others.

4. What to do after an earthquake when at home:

a. Check people around you for physical injury. Help if you can.
b. Check home for fire, loose wires, gas fumes, water supply damage, etc.
c. Acquire and store water. Make sure the hot water heater is not leaking; it is a vital source of drinking water.
d. Do not start fire or furnace without checking chimney.
e. Probably most service industries will be put out of service, so plan on reserve supplies lasting for an extended time.

IV. Storms:

A. Blizzard - Violent, cold.

1. Wind and cold extremes cause variety of problems.

a. Over-exerted heating systems
b. Loss of visibility
c. Loss of traction
d. Falls on ice
e. Loss of fluid water
f. Mechanical failures
g. Loss of service industries
h. Weight of snow on roofs

2. Warnings: Television, radio, newspaper, weather bureau, and visual.

3. Defenses against blizzards: Plan on loss of electricity, water, and transportation.

a. If time, stock foods that need no preparation.
b. Protect drinking water supply from freezing.
c. Stay in bed in case of heating system failure. Use caution in improvising fire or heat source.
d. Stay in one room if possible; watch for oxygen depletion if room is air-tight.
e. Stay inside until wind and snow stop and landmarks around you are visible.

4. Defenses against blizzard if you are in an automobile and crossing a potential blizzard area.

a. Vehicle must be in good condition.
b. Vehicle must be equipped with tire chains, shovel, extra gas, extra water, emergency food, and a tow chain.
c. If vehicle is stalled by snow or other conditions:

(1) Stay with it for whatever protection and materials it may provide.
(2) Utilize all fabric, mats, paper, and insulation to make a nest.
(3) Move supplies from trunk to back seat before it drifts shut.
(4) Keep one window slightly open to let oxygen in.

(5) Exercise (isometric if no space) whenever shivering starts.
(6) Turn off lights to save battery.
(7) Use engine to heat car for short periods of time -- just long enough to charge battery and warm the car a little. Be alert for carbon monoxide gas from plugged exhaust.
(8) Check others for hypothermia, frostbite, symptoms of anoxia or carbon monoxide poisoning.
(9) Leave vehicle for a snow cave if temperature is expected to drop below -10° F.

d. If caught in the open:

(1) Keep exercising. Avoid sweating.
(2) Keep dry and protect the body.
(3) Find shelter immediately. Live like an animal - dig in and curl up.
(4) Improvise to provide the necessities of survival.

B. Lightning Storms:

1. Understand what causes lightning.

2. Understand how it endangers life (bolt and ground currents).

3. Warnings - Audible, visual, and sensory.

4. Defense against lightning:

a. Move down from high places (off boats, horses, bicycles, etc.).
b. Move away from large metal objects.
c. Make yourself small - squat on heels with head down on chest.
d. Touch nothing until hair on arms returns to normal.
e. Stay away from trees, unless in a forest.
f. Don't stand alone in a field. Move to low area away from metal.
g. If possible take shelter in a rubber-tired vehicle with a metal top, wooden building, cave, or dry ditch.

5. If lightning strikes nearby:

a. Look for burns on feet and hands.
b. Check for breathing difficulty, symptoms of shock.

V. Fire on the rampage:

A. Fire destroys animals, houses, forests, and people.

B. Fire is terrifying to animals and people. Avoid panic.

C. Understand the principles of fire:

1. How and why fire spreads.

2. How to put out small ones.

D. Defenses against fire:

1. Inside a building:

a. Leave the building, closing doors and windows, if possible, to slow drafting of the flame.

(1) Do not open a door if any part of it is hot to touch.
(2) Open closed doors slowly and check for flames and smoke.

b. Signal others in building to leave, and then get out best way possible.

c. Crawl on floor along walls; watch out for the hot air - it can sear your lungs.

d. Report the fire immediately, then act to put the fire out.

e. Do not reenter the building, regardless of valuables.

f. If clothing on fire, smother it out (wrap in blanket).

2. Automobile Fire

a. If engine is smoking, lift hood cautiously. If electrical fire, disconnect battery wires first, then extinguish fire.

b. If gasoline fire, evacuate vehicle; stay back from vehicle; expect explosion.

c. Size of fire and location determine method to extinguish.

3. Putting out small fires:

a. Smothering is a fast and effective means of cutting off oxygen.

b. Remove fuel agent, if possible.

c. Cooking pot fires should be smothered.

d. Water can be used on all burning fuels except oil, gasoline, and electrical.

e. Wet down the area exposed to heat and flames.

f. Burning appliances normally stop burning when electricity or gas is shut off.

g. Follow instructions on chemical fire extinguishers.

h. Remember the rules of fighting fire:

(1) Drench it.
(2) Smother it.
(3) Beat it out.
(4) Restrict it.
(5) Cool it.
(6) Never underestimate it.

4. Dangers of smoke:

a. Visibility, fears, loss of oxygen.

b. Smoke may contain poisonous gasses.

(1) Crawl on floor along wall; beware of stairwell fire draft.
(2) Use wet towel over face, if possible.

5. Forest Fire

a. Check wind direction. If fire is upwind, move out of area fast.

b. If trapped, follow animals to water holes or lakes.

VI. Epidemics - Plagues and pestilence that destroy life.

A. Understand how epidemics spread.

B. Defenses against epidemics:

a. Isolation. b. Immunity. c. Sanitation. d. Antiseptics.

INTRODUCTION TO PHASE IV

COPING WITH MAN-MADE DISASTER

Natural disasters are known to have a devastating effect on mankind - his habits, values and attitudes. Man-made disasters may be on a smaller scale but can be equally harmful to those affected. The automobile wreck certainly can possess a threat to life. The home fire disrupts your life style temporarily. Pollution, civil disorder and explosions all could affect our life style, to some extent. Energy overuse may create some hardship in the everyday emergencies, and even create a major disruption of the job for pay system.

It has been a long time since our homeland has felt the ravages of war, hence many are unwilling to plan, prepare, or protect themselves from a nuclear disaster.

This chapter on coping with man-made disaster is intended to instill an awareness in the students' minds that these emergencies pose the same threat to life as a wilderness or natural disaster. The man-made emergency, such as auto, aircraft, boat accidents, will create a mini-wilderness survival situation, time lag problems, and weather exposure problems. Hence the victim will, for a time, be his own doctor, lawyer, and mechanic, and at the mercy of his own mental resources and confidence.

Perhaps the best place to have a serious accident with injuries would be in front of a large, resident doctors' hospital. This is because modern Americans have been brainwashed by commercials to expect instant relief from all pain, discomfort, and boredom. The time lag (your time) period on the freeways and in the city still depends upon someone requesting help via the best means of communication. The strangers' attitude of non-involvement is often detrimental, along with some people's reaction of turning away in hope the problem will disappear. This hesitance to help humans in distress emphasizes the reason for this chapter: don't depend upon others; expect to cope with your emergency yourself.

Instant response capabilities by volunteers and government agencies cannot always be guaranteed. Those touted instant reliefs may be a while reaching you. In some cases, no one has to help you.

This chapter is devoted to making the student aware that everyday emergencies do occur. That they must, alone if necessary, determine the problems and solutions during the time lag period. The self-sufficiency known as common sense is acquired throughout life, from life's experiences.

WHAT IS COMMON SENSE? Evaluate yourself on page 16.

PHASE IV INTRODUCTION

SERENITY TO HOSTILITY IN MINUTES: Mental stress should be of primary concern in mini-emergencies. Loss of loved ones, valuable materials, status, money, etc., will create stressors within the mind that are detrimental to rationalizing and problem solving in the immediate situation.

Mental stress is a major problem for persons involved in creating the emergency. The consequences of the accident, death, injuries, are far reaching; they could affect the involved person's life style, job, security, and future. This mental stress is extremely harmful toward positive thinking.

Nearly everyone fears the unknown. The students' understanding of accident response, as put forth in this phase of emergency preparedness, hopefully will help them recognize and understand the unknowns.

RULES FOR MENTAL CONTROL:

Adapt to the real situation. Dispel or fight off imagination. No "ifs."

Set a goal:
- To get home.
- To make something - do something constructive to fill your needs.
- Concentrate on the problem.

Stay in the "here and now."
- Plan for tomorrow.
- Forget yesterday.

Accept the fact that it happened.
- That it is real.
- You have a problem.
- You are scared.
- You don't like it.
- You must do that which is to be done.
- You <u>can</u> do it.

EMERGENCIES: Since emergencies happen unexpectedly, the individual will usually have to meet it with just what he has on his body or immediately available near him. That is why survivalists habitually put their clothing, shoes, and knife in exactly the same location every time they go to sleep. They also keep necessary tools, survival kits and extra clothing beside them or within reach when traveling. Survivalists, because of their constant mental problem solving and curiosity, develop a superior reticular system which allows them to see a mental picture of the need and what will serve that need.

PHASE IV CHAPTER 1

COPING WITH MAN-MADE DISASTERS

OBJECTIVE: To develop an awareness that modern technology has given man dangerous tools for play, work, and travel. Disasters of violence do occur. Man pitted against man is the greatest danger of all.

DESIRED UNDERSTANDING:

1. To understand pollution and its effects on man.
2. To be aware of the awesome effects of war.
3. To understand mob psychology and the end result of civil disorder.
4. To understand that man is master of his own destiny.
5. To understand that mechanical technology has given man speed that kills and injures.
6. To understand that in all accidents, man has only a few seconds to react to save himself.

Instructor - To set the tone for this lesson, discuss a few of the accidents you know about. Have a student recall his accident.

I. Pollution: Man befouling his environment.

A. Air pollution and its effect on man.

B. Water pollution and its effect on man.

C. Thermal pollution and its effect on man.

D. Controls for pollution.

E. Man's acceptance of technological limitations.

F. Man's personal commitment needed to prevent pollution.

Resources: National Safety Council or Civil Defense pamphlets on related subjects.

II. Warfare: Man-made violence.

A. Nuclear attack:

1. Learn warning signs and signals.

2. Study civil defense manuals.

   a. What to do before an attack.
   b. What to do during an attack.
   c. What to do after an attack.

3. Understand the effect of radiation.

4. Understand principles of radiation fall-out.

5. Understand the need and principles of fall-out shelters.

B. Other types of wars:

1. Non-nuclear bombing
2. Germ warfare
3. Famine
4. Capture
5. Imprisonment
6. Subterfuge

C. National pride:

1. Man's personal honor
2. Man's personal freedom
3. Hope, faith, love of family.

III. Civil Disorder:

A. Mass hysteria of mob psychology.

B. Riot protection:

1. Best protection is common sense.
2. Curb emotions and fears - resist mob hysteria.
3. If in public, leave the scene quickly and politely.

   a. Do not let determination to continue your plans involve you in the riot. Change your plans immediately.

   b. Do not talk with, or trust, angry or frightened strangers.

c. Obey civil authorities.
d. Do not argue or quarrel with anyone.

4. If trapped in a mob:

a. Walk quietly to a wall - protect your backside.
b. Do not invite attack - be passive looking.
c. Do not show weapons of any kind.
d. Leave as soon as possible.

C. Explosion and gunfire:

1. Take evasive action immediately.

2. Determine source of problem.

3. Take cover, lie down, protect face and head from flying and falling objects.

4. Your present position may be vulnerable or may become more dangerous. Be alert for any change you may determine it best to move your position.

5. Leave the scene immediately.

6. If in a building:

a. Stay away from windows, doors, and walls.
b. Move to inside halls. Turn tables on side for more protection.
c. If explosion, wait for the smell of smoke, if any. Use standard fire-fighting principles.
d. Treat injuries and provide for priorities of life.

IV. Universal Risk and Modern Technology:

A. Almost everything we do has some risks.

1. Risk is enhanced by irresponsibility.

2. Danger may be enhanced by mechanical technology.

3. Risk is increased by lack of understanding.

4. Abnormal environments increase risk potential.

5. Risk is compounded by speed and motion.

B. Automobile - The provider of mass mobility.

1. The major cause of serious injuries in America.

2. Responsibility of driver (safe performance and defensive driving in all conditions).

3. Responsibility of passenger (as contributor, distracter).

4. Responsibility of owner (prevention, maintenance).

5. Drive defensively - only you can save your life.

a. Learn all you can about operation of the vehicle and its mechanical performance.
b. Laws that govern operation of vehicle.
c. Responsibility to self and others.
d. Responsibility of operation and maintenance.
e. Recognize unsafe equipment (for all conditions.)
f. Use all safety devices, seat belts and shoulder straps.
g. Understand the laws of physics related to motion and the forces generated by motion impact.

C. Accident Survival - Any moving vehicle.

1. Vehicle in your control:

a. Steer out of trouble if at all possible.
b. Press your body in the direction of the impending crash.
c. Twist sideways and lie on seat just before impact.
d. Try to lessen the forced movement your body will have on impact.

2. Vehicle in control of others:

a. Remember you have 2, 3, 4, or 5 seconds before you will crash. Help yourself every second.
b. You know the impact will throw you forward, so put your head on your forearm on the flat part of the dashboard. (You can watch the accident and have lots of injuries, or you can react and lessen the injuries. The choice is yours.)
c. In back seat - quickly lie down on floor and relax. Protect your head and face from flying glass and debris.
d. If, hopefully, you are wearing a seat belt, put your head down on your knees, protect your head with your arms.

3. After the crash.

   a. Stay out of the roadway.
   b. Beware of other cars hitting yours.
   c. Warn other cars of danger, if possible.
   d. Check for injuries - do not move other victims unless they are in danger.
   e. Look for shock symptoms in all persons involved.
   f. Stay away and keep others away from vehicle if you smell gasoline or other explosives.

C. Airplane crash:

1. Unless you are the pilot - follow orders and instructions given.

2. You can help yourself to live by remembering where the emergency exits are.

3. Learn the instructions for opening the exits, and understand them.

4. Listen and fully understand the instructions for emergencies. Always abide by them.

5. React immediately to instructions. Often you have only a few seconds to evacuate the plane.

6. In the event you see a crash possibility or have to ditch at sea:

   a. Follow instructions given by stewardess.
   b. Tighten seat belt; place one arm on knees, pillows or extra clothes in lap, head on extra clothes or pillow, arm over head, and then push forward.
   c. If you can get to the tail of the plane, it is the safest place.

7. After the crash:

   a. Leave the plane as fast as possible - in an orderly manner.
   b. Analyze danger and help others if possible.
   c. Stay away till gasoline fumes are gone.
   d. If on water, follow instructions. Don't all rush to one raft.

D. Boat Accidents: Water is often an unfamiliar environment to man.

1. You must act to help yourself.

2. Analyze the immediate danger to determine the best defensive action.

3. Obtain a life preserver or floating aids.

4. If in the water:

   a. Search for other victims and large floating debris.
   b. Swim to debris, hang on or tie yourself to it.
   c. Push debris to other victims.
   d. Learn how to swim and float. If not for fun, learn for survival.
   e. Get rid of any heavy objects you might have on (boots, waders, etc.).

5. If on boat wreckage:

   a. Check sinking rate. Many boats will not sink. They will remain afloat.
   b. If there is an explosion, check for fire or possible fire.
   c. For possible fire, tie a long rope or line to the boat and jump overboard. Keep hold of the line and swim away from the boat. Return when it is safe.
   d. Remain on or near the wreckage if at all possible.
   e. You can nearly always salvage something to help your survival.

E. Survival at sea in an open boat:

1. Priorities of life apply.

2. Body enemies will be the same as on land.

3. Body exposure will be greatest threat.

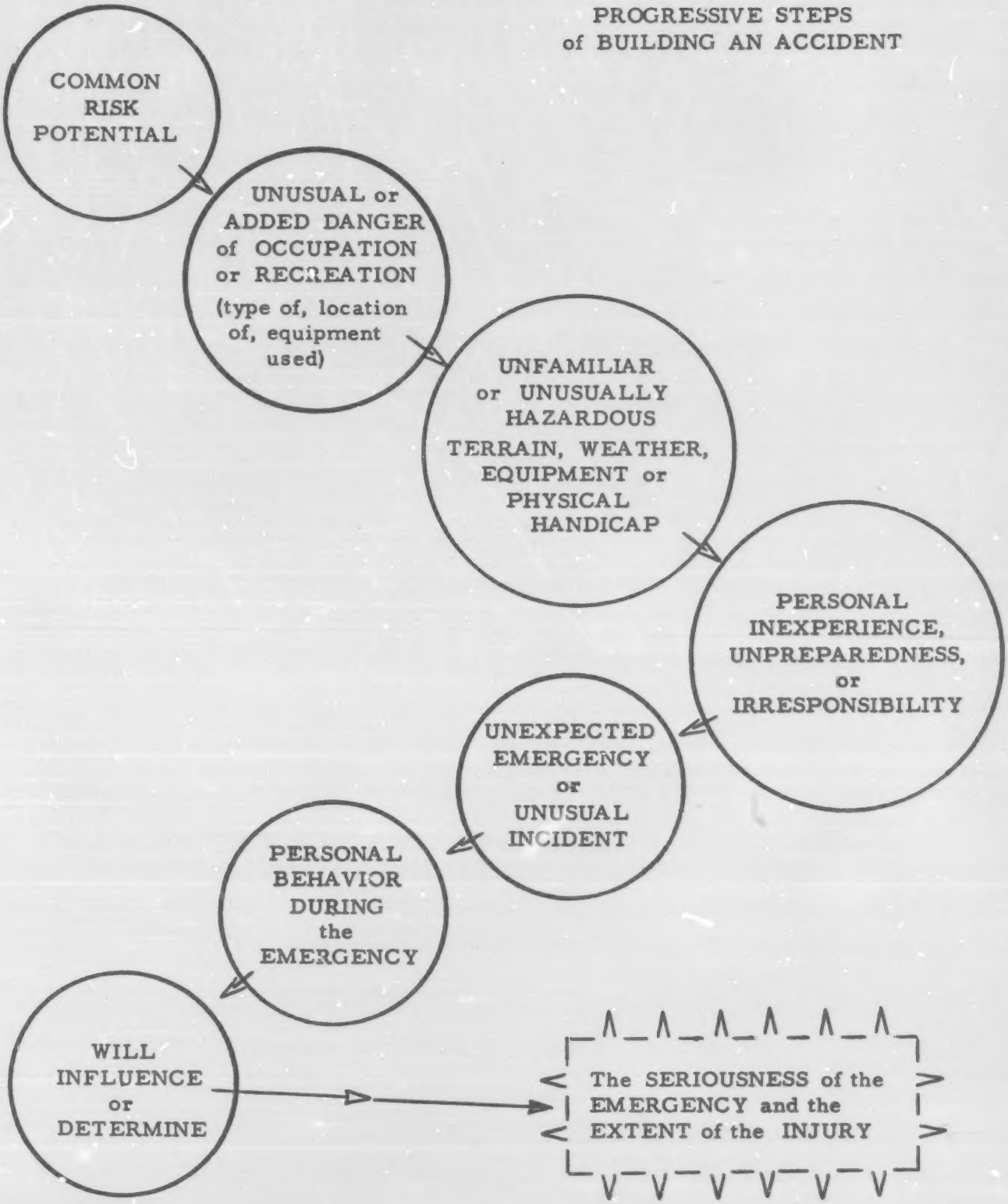
4. Dehydration and mental attitudes will be the next threat to life.

F. Practicing individual reactions to man-made emergencies:

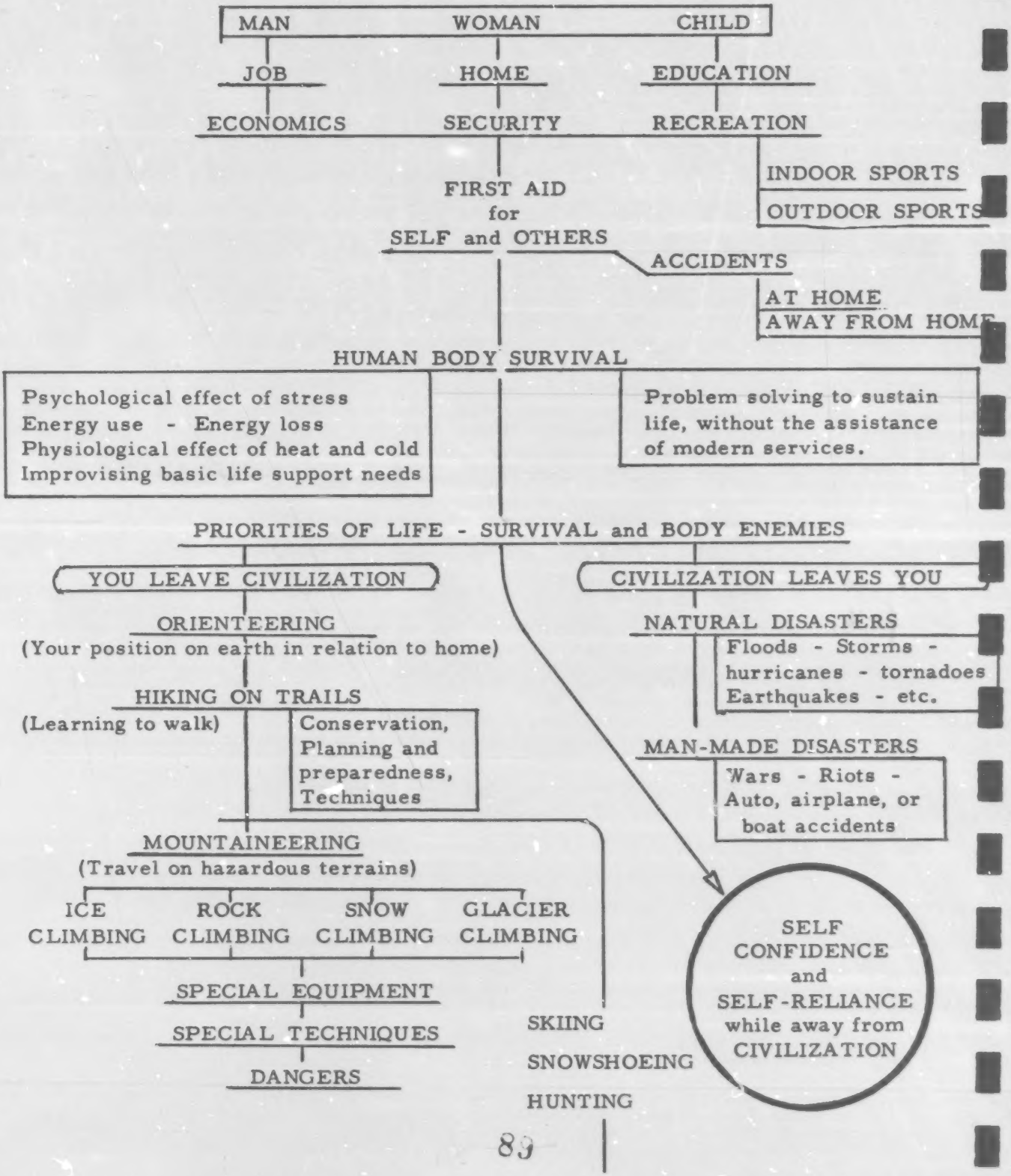
1. It is very beneficial to stage real live participation.

2. Hypothetical practice is good to show why and how we should react to a given emergency situation.

PROGRESSIVE STEPS
of BUILDING AN ACCIDENT


COMMON RISK POTENTIAL
UNUSUAL or ADDED DANGER of OCCUPATION or RECREATION (type of, location of, equipment used)
UNFAMILIAR or UNUSUALLY HAZARDOUS TERRAIN, WEATHER, EQUIPMENT or PHYSICAL HANDICAP
PERSONAL INEXPERIENCE, UNPREPAREDNESS, or IRRESPONSIBILITY
UNEXPECTED EMERGENCY or UNUSUAL INCIDENT
PERSONAL BEHAVIOR DURING the EMERGENCY
WILL INFLUENCE or DETERMINE
The SERIOUSNESS of the EMERGENCY and the EXTENT of the INJURY

SCOPE AND SEQUENCE CHART FOR SURVIVING THE UNEXPECTED



PROBLEM ANALYSIS
For Anyone Alone, Away from Civilization

FIRST STAGE

Assess the seriousness of the problem, determine necessary priorities, and establish priorities of action.

Determine the possibility of future problems - after immediate needs are fulfilled.

Analyze your total problem: Now - Tonight - Tomorrow.

SECOND STAGE

How does this emergency affect my body right now? Tonight? Tomorrow?

What are my body's major enemies now?

What do I need immediately? (Body protection, rest or exercise, etc.)

Areas to be concerned about in emergency planning for the immediate future:

Darkness: Plan to be immobilized and unable to see danger.

Shelter: This very important need takes time and energy to find location and build from natural materials.

Animals and insects: Often will affect your situation.

a. A few require protection from or avoidance.
b. Many are pests that raid food and damage equipment.
c. All animals have habits and habitats. Understand them. They often give useful information about food and water or easy travel.
d. Snakes and poisonous insects need special caution in avoidance.

Unfamiliar environments: Plan to exercise caution at all times.

a. Travel slowly on any insecure footing.
b. Avoid all terrain dangers, if possible: avalanche chutes, gullies, creek beds, swamps, moats, cliffs, crevasses, and swift rivers. (Travel around such obstacles generally conserves energy and lessens the danger of further delays or injury.)

Surviving a storm in the wilderness is not easy. It often is a demoralizing, miserable experience that will challenge your every effort. Anything a person can do to shorten the length of his stay under these conditions should be explored.

Regardless of the circumstances, a person in a wilderness emergency must constantly be aware that any injury may compound his problem. That every move must be constructive toward solving his problem of sustaining life. He must remember that the remaining energy within his body may be all he has to sustain life through the emergency.

Reprintable

IMPROVISED EMERGENCY PREPAREDNESS KITS

WALKING SURVIVAL KITS

Should provide

Instant body protection from weather elements.
Instant energy food.
A means of signalling distress.
A means of starting a fire.
A means of cooking or heating water.
A means of patching body injuries.
(See Pages 85 and 86 for do-it-yourself kit.)

TRAVELING SURVIVAL KITS (Vehicles)

Same personal requirements as walking.

Additional items:

Emergency fuel and water (engine)
Emergency food and liquids (2 days minimum supply)
First Aid Kit
Blankets or sleeping bag
Extra clothing and foot wear for emergency travel
Repair tools for emergency repairs.
(See Pages 87 and 88 for do-it-yourself kit.)

HOME SURVIVAL KIT (For natural or man-made disaster)

Same personal requirements as walking - for each person.

Additional items:

All purpose medicine chest (First aid supplies, etc.)
Staple foods (dry) not requiring cooking (2 weeks' supply)
Canned food (non heating type) (2 weeks' supply)
Repair Tools - Saw, hammer, nails, axe, wrenches, etc.
Maintenance tools - Pliers, pipe wrenches, screw driver, etc.
Fire hose (garden type) 100 ft, and a frost free faucet. Axe, buckets, extinguishers, baking soda.
Sheet plastic, 9' x 12' (4 mill or heavier)
Blankets and heavy clothing
Water and fuel storage containers.

Example: The need - something to cover the big, broken window that lets wind, rain and cold inside the house.

What will fix this: Two inside doors; a big sheet of veneer; plastic sheet; wall paneling; plaster board.

This page is reprintable.
also pages 85 &86 Auto Emergency Kit.
and 87 & 88 Airplane Emergency Kit.

SURVIVING THE UNEXPECTED STORM

The first few hours of any wilderness survival emergency will be the most important. Decisions made during this period usually determine life or death.

WEATHER STORM ENEMIES

RAIN – Cold and wetness cause extreme body heat loss.

WIND – Cools the body; blows away heat faster than the body can produce it.

BLIZZARD – Cold, heat loss, mobility threatened, mental stress.

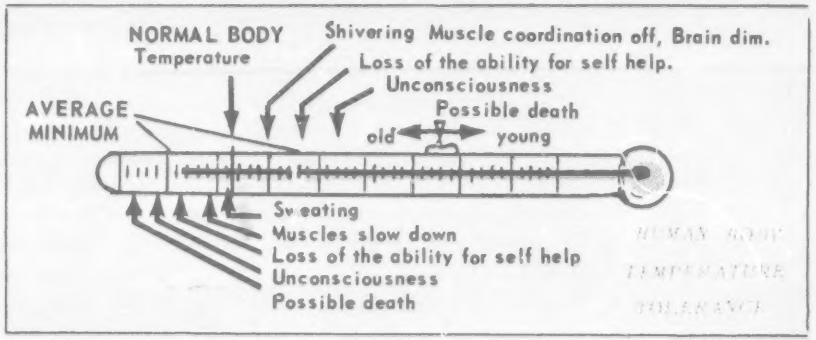
SUN – Body heat gain, dehydration, blindness, burns.

FOG or DARKNESS – Loss of direction, mobility; heat loss, mental stress, fears, etc.

MAJOR BODY ENEMIES (in order of importance)

Take care of the brain first. Then it will take care of you.

#1	– YOURSELF	The mind controls the body, self-confidence, attitude, fears, determination, imagination, ability, skills, panic.
#2	– INJURY	Can affect the priorities of life, mobility, skills, dexterity – compounding the problem of acquiring the necessities of life.
#3	– TEMPERATURE CHANGE	The human body has a very narrow temperature tolerance – 95° F. to 101° F. Any change in temperature will affect the normal production of the life energies in the cells.



COMPILED IN THE INTEREST OF SURVIVAL EDUCATION BY GENE FEAR

SURVIVAL EDUCATION ASSN., TACOMA, WASH. 98445

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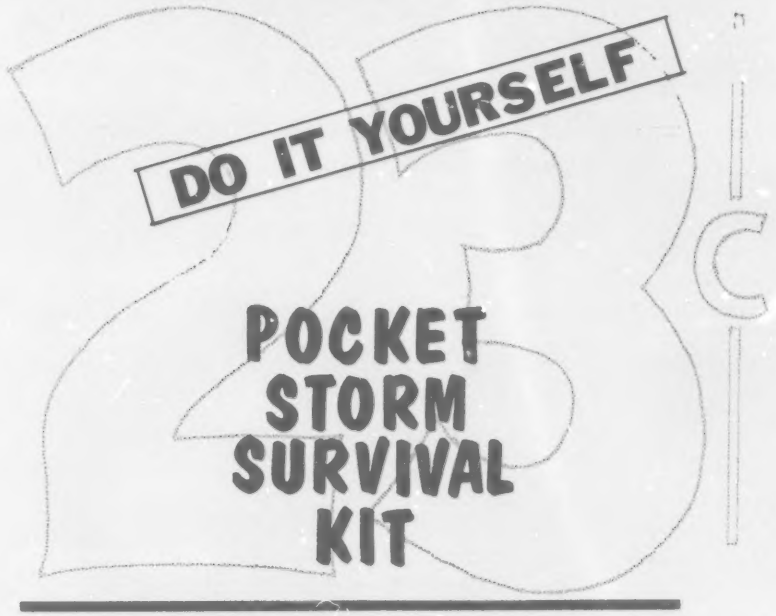
This KIT + Knowledge = Best Overnite Survival Insurance Policy.



This kit is designed to help you acquire the necessities of life during a storm, by providing the following *necessities to help you stay alive.*

INSTANT INTERNAL WARMTH:

Can (for cooking pot, teakettle), Candle, Matches (for fire starting) – treatment for accidental body heat loss. Inner body must be at or near optimum temperature of 98.6° F for living cells to produce the energies to sustain life.

INSTANT BODY PROTECTION:

Plastic tube, bags, or sheet – help retain the vital tropical air layer around the body by keeping you dry, and lessening the transfer of warm air with cold air. Conserves your limited energy supply.

INSTANT ENERGY

Sugar – is what the muscles use to produce heat to keep the body at the nearly constant 98.6° F. You will have a given amount of energy at the time of your emergency. It can be conserved to last a long time, or it can be used up very quickly. The choice is yours alone.

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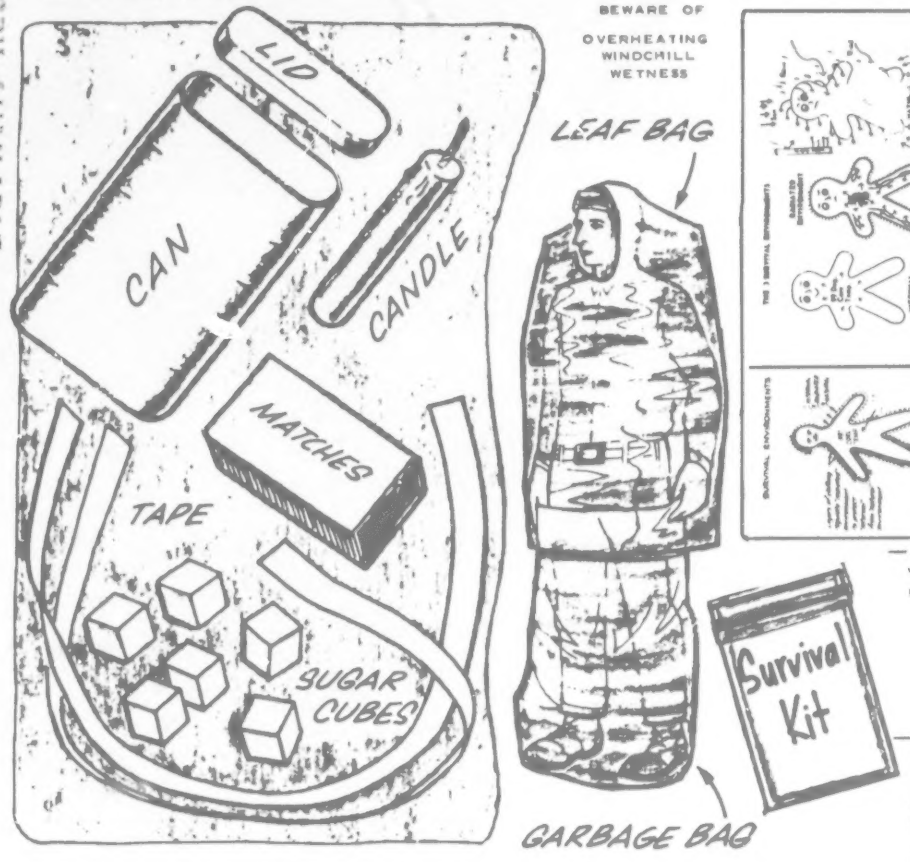
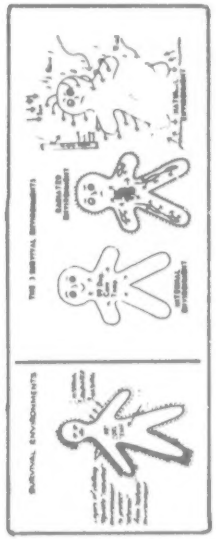
Such a kit, homemade or purchased, cannot help you survive a storm unless it is available when needed. Always carry it whenever you travel away from civilization.





PERSONAL SURVIVAL KIT

Overnight emergency provisions you can fabricate in a few minutes at home from kitchen and garage supplies.

CAN	1 pint liquid can with top cut out is best (clean it well). Lid can be made from plastic and sealed with several wraps of electrical tape. (Any can will do.)
CANDLE	Half of a Christmas candle or plumbers candle will help kindle a fire or heat ¼ cans of water. Put in plastic bag.
MATCHES	Penny box of strike-anywhere matches -- used to light the candle or fire. (Waterproof in a plastic bag.)
LEAF BAG	7-bushel size fits a 6' man. Cut a hole in the sealed end for face or head. Cover head if possible (not the face).
GARBAGE BAG	30-gal. size. Pull up over legs and tuck into pockets to protect legs from wind and rain. These bags can be used for shade from the sun.
SUGAR CUBES	6 to 12 cubes will give instant energy needed to move muscles for heat production. Wrap in plastic.
TAPE	May be used to close face opening, patch clothing, secure top and bottom plastic, as emergency bandage tape, etc.

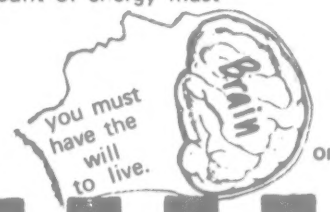
YOU HAVE ADMITTED YOU MIGHT NEED THIS KIT SOMEDAY BY TAKING THE TIME TO MAKE IT. MAYBE YOU WOULD LIKE TO MAKE IT BETTER. SOME SUGGESTIONS!

1 SINGLE-EDGE RAZOR BLADE	NYLON FISH LINE (50') AND HOOKS
2 - 3 BANDAIDS	SMALL WHISTLE
2 - 3 TEA BAGS	SMALL MIRROR
2 - 3 BOUILLON CUBES	24" SMALL WIRE - 18 GAUGE
2 DIMES - FOR THE PHONES	2 SALT PACKETS

THINK!! YOUR BRAIN IS YOUR BEST SURVIVAL TOOL!!

In any unexpected storm you will have a given amount of energy, which will take you so far, so fast. This limited amount of energy must provide the fuels to:

Mentally solve the problem of staying alive,
Move muscles to provide vital body heat,
Move muscles for your mobility, and dexterity,
Control the mind -- which controls all mental and physical use of this limited fuel.



The threat to life during any unexpected emergency will be centered around certain body enemies that attack the body in a variety of ways. Sometimes singly, sometimes in concert -- but always these enemies will possess a threat to the process of sustaining life without assistance or guidance from others. You must know how these can harm you and how to prevent them from getting too great a hold upon the body.

For you to solve the problem of staying alive --

You must recognize a challenge or a threat against your life.
You must react to the body's problem indicators.
You must ascertain the priorities needed to maintain life.
You must combat the body's enemies that threaten life.

These demands must be met regardless of the cost in material things or energy expenditure.

It's your body -- and your problem.

A DO-IT-YOURSELF EMERGENCY PREPAREDNESS KIT

AIRPLANE EMERGENCY KIT

(Components of this vital kit may be found in most homes and garages.)

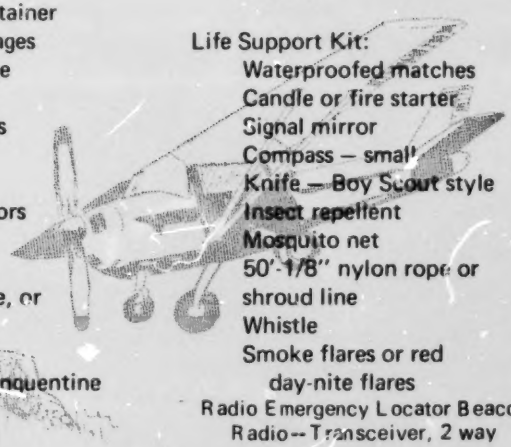
Container – Any lightweight metal container with lid, suitable to heat and store water.

Life Support Tools:
- Hack saw – Single handle with wood blade and metal blade
- Plier – vise grip
- Plier – slip joint
- Screwdriver set (multiple)

First Aid Kit – Personal:
- Sealable Plastic Container
- 2 – Compress bandages
- 1 – Triangle bandage
- Small roll 2" tape
- 6 – 3 x 3 gauze pads
- 25 – Aspirin
- 10 – Bandaids
- Razor blade or scissors
- Hotel size soap
- L – purse size
- Kleenex – purse size, or toilet paper
- 6 – Safety pins
- 1 – Small tube of Unguentine or Foile

Shelters (minimum of 2):
- Large plastic sheets – 9' x 12' –
- Heavy gauge (one for each person) colored red or yellow preferred for signal panels

Life Support Kit:
- Waterproofed matches
- Candle or fire starter
- Signal mirror
- Compass – small
- Knife – Boy Scout style
- Insect repellent
- Mosquito net
- 50'-1/8" nylon rope or shroud line
- Whistle
- Smoke flares or red day-nite flares
- Radio Emergency Locator Beacon
- Radio--Transceiver, 2 way



Food and Energy Package – 1 man 5-day rations
- 2 or 3 cans of Sego, Nutriment or Metrecal for liquid and energy.
- 30 – sugar cubes – wrapped
- 10 – pilot bread or 25 crackers
- 10 – packets of salt
- 3 – tea bags
- 12 rock candy
- 5 – gum
- 10 – bouillon cubes
- 20 – protein wafers (if available)

Use poly bags for water storage.

Put each item in small plastic bag and seal. Put everything in small metal can (cook pot), seal with poly bag and tape.

ONCE YOU ARE ON THE GROUND

You are on your own now... Expect the worst. Expect search planes after the storm. Be ready with signals.. Attracting help to your location has to be your prime objective. If you are in the forest-- move to a clearing or exposed ridge.

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AUTOMOBILE SURVIVAL KIT

(Components of this vital kit may be found in most homes and garages.)

Your vehicle is your movable , second home.

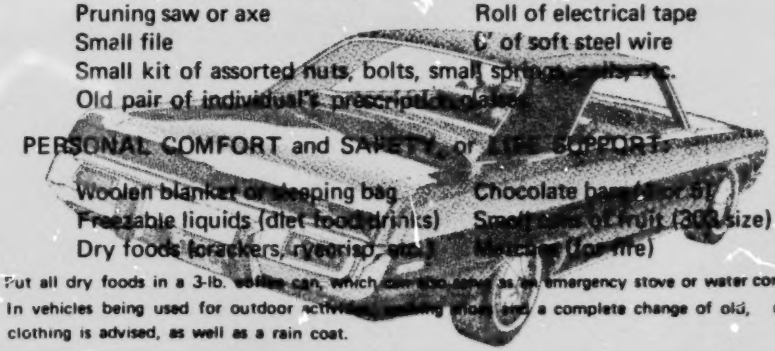
Always carry a few items for use during delays, emergencies or mechanical failures.

EMERGENCY EQUIPMENT for COMFORT, SAFETY,and LIFE SUPPORT.

Carry these in your trunk or glove compartment the year around:
- Sun glasses
- Spare tire, jack, tire change tools
- Tire chains that fit
- Heavy rope or tow cable
- Signal aids – flashlight, flares
- Shovel (short garden spade)
- Pruning saw or axe
- Small file
- Small kit of assorted nuts, bolts, small springs, nails, etc.
- Old pair of individual's prescription glasses
- Colored plastic tarp (5 x 12)
- Water bucket
- Multiple screwdriver set
- Crescent wrench
- Pliers, slip joint
- Pliers, vise grip
- Roll of electrical tape
- 6' of soft steel wire

PERSONAL COMFORT and SAFETY, or LIFE SUPPORT:
- Woolen blanket or sleeping bag
- Freezable liquids (diet food drinks)
- Dry foods (crackers, ryevita, etc.)
- Chocolate bars (4 oz. ea.)
- Small cans of fruit (303 size)
- Matches (for fire)

Put all dry foods in a 3-lb. coffee can, which can double as the emergency stove or water container. In vehicles being used for outdoor activities, a sleeping robe and a complete change of old, usable clothing is advised, as well as a rain coat.



AUTOMOBILE FIRST AID KIT
- Sealable plastic container,
- 2 Compress bandages
- 1 Triangle bandage
- Small roll of 2" tape
- 6 – 3 x 3 gauze pads
- 25 Aspirins
- 10 Bandaids
- Knife.
- Scissors
- Bar Soap
- Tube of Foile (for burns)
- Ampoule of ammonia inhalants
- Green soap disinfectant
- Needle
- Safety pins
- Matches

AUTOMOBILE SURVIVAL

In vehicle survival---- Always drive defensively-- Think ahead, use self talk and psycho-pictography to visualize potential dangers to self and vehicle.

Compiled in the interest of Survival Education by Gene Fear

Published by
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9035 Golden Given Rd.
Tacoma, Washington 98445

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STALLED VEHICLE and EMERGENCY PROCEDURES

If Away From Civilization

Your vehicle is a moving shelter, designed to move you and yours from one place to another. In an emergency, knowledge and improvisation can keep you moving closer to home or help. 5 MPH is not very fast, but it is better than walking during a storm.

Damaged and leaky radiator (emergency only): Plug hole with rags, wood, material. Using cream of wheat, Wheateena or other expanding wheat cereals mixed into radiator water can plug hole from the inside.

Leak in water hoses to heater. Disconnect both ends and plug with limb or wood. Retighten clamps

Leak in a water hose on engine. Plug hole; wrap with cloth, then electrical tape. Remove radiator cap to relieve water pressure. Keep engine rpm low.

Punctured hole in gas tank can be sealed with bar soap carved to fit hole.

Broken hydraulic brake lines can be crimped between the leak and the hydraulic pump. Use low gear to help stop.

Vapor lock can happen to overheated engines in vehicles which are traveling slowly or pulling up steep hills in high altitudes. This is usually caused by overheated fuel lines near the engine. The gasoline liquid turns to a vapor, causing a bubble that stops the flow of liquid. The symptoms of vapor lock are the same as out of fuel. Cool all fuel lines, carburetor, fuel pump with wet rags and ventilation. If you suspect a flooded carburetor (engine compartment smells of gasoline) during starting, push the accelerator to the floor and hold. Do not pump the accelerator.

To extend the miles you can travel when low on fuel, slow down to 25 or 35 MPH. Coast downhill when possible. Shift down a gear when it is necessary to use full throttle. Keep RPM steady; 1500 to 2000 is best.

It is better to creep along in a limping auto at 5 MPH than to walk home in a storm of wind, rain, or heat.

Loss of traction in sand, mud, snow: Weight distribution is often the major problem. Transfer of weight to drive wheels (adding weight – rocks, snow, wood, sand, people) will give traction enough to get over a hill. Too much weight in one spot can alter vehicle's steering characteristics. Floor mats can be used to give short distance traction.

If car is snowbound during a storm and you cannot see a house or light nearby, prepare to stay in the car. A window must be opened enough to allow oxygen to enter. In extreme emergencies (when you are in danger of freezing) consider the door and ceiling insulation, maps, etc., as material to help keep you warm. The smaller the nest, the easier it will be to keep warm. As a last resort, use seats to make sleeping bag, using electrical wire for sewing upholstery.

CAUTION: Cars can be airtight, so allow ventilation for carbon dioxide and possible carbon monoxide. If you leave a snowbound vehicle, leave a note as to your destination and condition.

DESERT TRAVEL

Extra water is advised. Cleaned bleach jugs can serve as emergency water canteens.

Getting stuck in the sand seems to be the greatest desert driving problem; it is advised you carry 6' of mesh fencing and a few short 2 x 12 planks to support the car jack for lifting. In emergency, use floor mats to give support and traction, or hub caps for jack support.

Moving vehicles are subject to variable weather, terrain and environmental conditions, that will alter normal driving expectations. Be alert for these often very rapid changes and recognize the potential danger before you become a victim of the laws of motion, gravity, velocity, or friction.

Your vehicle is your home away from home. It provides safety, warmth and shelter. It is big, easily seen, and in a storm it offers the best protection from the weather.

DOWNED AIRCRAFT EMERGENCY PROCEDURES

A search normally starts after you are reported missing and your fuel is exhausted.

Stay away from the aircraft, if possible, until engines have cooled and spilled gasoline has evaporated.

Check for injuries, give first aid when necessary. Be careful in removing casualties from aircraft, particularly people with serious injuries.

Get out of wind and rain. Make or find temporary shelter.

Get your emergency signaling devices ready and have signal equipment handy. Every possible effort must be made to attract searchers to your location by signals – mirror, smoke, flares, color panels – and to sustain life and energy until assistance arrives.

Evaluate your location dangers: fire, sliding, rockfall, avalanche, terrain, weather.

Turn on or make sure your EMERGENCY LOCATOR BEACON is on

Search the aircraft for small personal items, tools, maps, etc.; evaluate and store for later use. Save everything. Keep dry.

Your prime effort must be directed toward conserving the energy you have.

Stay with the aircraft if at all possible. It contains the basic ingredients for warmth, shelter and signaling materials.

Aircraft should be made VISIBLE FROM THE AIR if possible. Clear brush, cut trees, etc. Be prepared to make signals as aircraft approaches your area. Keep the mirror handy if the sun is shining. Practice its use.

Colored panels can tell a message. Pile brush is SOS. Stamp large, two-feet-wide letters SOS in the snow. Fill stamped marks with boughs or small brush.

Keep your signal fire burning all the time. Smoke and firelight can be seen from great distances. Both air and ground searchers will be looking for them.

Do not neglect your aircraft radio. It is possible it may still be operational. Turn squelch and volume; if you get any sound when mike button is pushed on and off it is possible that your radio is operational. Voice broadcast on a local frequency (in pilot's book) every 15 minutes during good weather – or if battery is weak, Morse Code SOS. Repeat often.

In cold weather, insulation and upholstery from the craft make excellent material for overboots, sleeping bags, mittens, hats, and ground insulation. Sew them together with salvaged aircraft wire. Put plastic side out for better wetness protection.

Clear window makes fair emergency mirror. *Signals make you effectively bigger.*

Wings, rudder, etc., all may be used to make a shelter. Keep this shelter as small as possible, to lessen the area your body must heat. Insulate shelters with boughs, bark, tarps, maps, etc. Use *anything* to keep the wind and rain from getting inside your shelter. Body heat loss is energy lost.

Gasoline and engine oil are fuels for emergency heaters and stoves.

Your aircraft can fulfill most of your basic needs if you improvise. Think basic needs: Shelter (cover), warmth (fabric), tools (metal). Maps, newspaper, engine cover, plastic tarps all make excellent emergency bedding.

If running water is not readily available melt snow or ice in improvised pot, or squeegie (with windshield wiper, etc.) dew drops from aircraft surfaces. In an emergency, toss a sheet of flat plastic out the window so that it may collect dew or condensation. If it is raining, place plastic sheet in ground depression to collect water.

Requirements for Life:	You can live without it approximately
Air	3 minutes
Body shelter	6 hours in severe weather
Water	3 - 6 days
Food	3 weeks
Will to live	?

During any emergency Your body will have a limited supply of

.....ENERGY
.....OXYGEN
.....BLOOD
.....WATER
..KNOWLEDGE

SELF EVALUATION QUESTIONAIRE

For prevention of outdoor miseries or survival type emergencies

These questions, when answered to the best of your ability can give you the level of your ability to cope with unusual emergency situations and indications of the areas you may need more knowledge.

1... How long can the average person function without water intake? (Temperature 100°.)
1. 10 days 2. 3 days 3. 2 weeks 4. 1 day.

2... Insulation is anything that has the following quality:
1. dead air spaces 2. many layers 3. close weave material 4. waterproofing

3... Rank the following priorities to consider during a survival situation:
1. food 2. shelter 3. water 4. becoming unlost.

4... What is the most important thing to be able to use properly in an emergency situation?
_____

5... What clothing material should you avoid in wet weather? _____

6... What are the general body necessities of survival besides air and shelter?
_____ _____ _____ _____

7.... The International distress signal for wilderness use is: 1. SOS
2. three fires, whistles sounds or three of anything 3. a large fire 4. none of these.

8... Which of the following can cause circulatory upset? 1. Hypoxia 2. Hypothermia
3. Hypohydration 4. hyperthermia 5. fatigue 6. exhaustion 7. none of them

9... Assuming water is scarce, which would require the least amount of body fluids for assimilation? 1. protein 2. fat 3. carbohydrates

10... Circle the initial sign of hypothermia: 1. stumbling 2. sweating 3. shivering
4. dumb brain.

11... Other than evaporation, which way can the body lose heat to the environment.
1. respiration 2. conduction 3. radiation 4. convection (all that apply)

12.. Circle the ways heat can be introduced internally in the body; 1. convection
2. conduction 3. radiation 4. muscle action. (all that apply)

13.. Which of the following are symptoms of hypohydration or dehydration? circle them.
1. headache 2. fatigue 3. constipation 4. increased pulse rate 5. muscle cramps

14.. Which of the following is the most important in a survival situation?
1. skills 2. clothing 3. attitude 4. equipment. 5. food intake.

15.. The needle in a compass points to : 1. true north 2. grid north 3. geographical north
4. none of these.

16.. High altitude cirrus clouds forecast which of the following weather conditions?
1. cold front 2. thunderstorm 3. high winds 4. warm front.

17.. Body ventilation as well as body insulation is needed in very cold environments?
1. yes 2. no .

18.. Rest can be the best cure for most self inflicted outdoor miseries? 1. yes 2. no .

19.. Can you tie a knot in a rope that you would trust your life too in a 150' lift from a flooding island? 1. yes 2. no .

20.. Who is responsible for you in the backcountry? 1. Rangers 2. Sheriff 3.you 4. your father

21.. You need warm clothing for a 2 day trip in the Arizona desert? 1. yes 2. no .

22... Waterchill can be worse than windchill? 1. yes 2. no.

23... Fast swimming in cold water helps to keep you warm and prolong survival?
1. yes 2. no.

24... When you are exposed to windchill or waterchill the fetal position can be beneficial?
1. yes 2. no.

25.. If it was very cold and you were given one item from the following. Which would you choose dressed as you are now? 1. knife 2. firestarter 3. down jacket 4. wool blanket .

26.. Your inner body responses to heat gain, heat loss, water loss and chemical upset can cause which of the following? 1.overall tiredness 2. loss of muscle use 3. a dumb brain 4. an attitude change (all that apply)

27.. In the desert it is best to conserve and protect the water you have inside your body rather than expend it digging for needed water. 1. yes 2. no .

28... Survival situations can develop (circle those that apply) 1. on the desert. 2. in the Arctic. 3. when you mismanage your body 4. in the city 5. in an automobile.

29.. How long does it take your body to acclimatize to a temperature extreme environment?
1. two days 2. one day 3. one month 4. about 2 weeks.

30.. How long does the average survival emergency last? 1. one hour 2. one month
3. 3 days 4. 7 days.

SELF EVALUATOR

★ 1 TO 5 WRONG
YOU CAN TRAVEL WITH PAUL PETZOLDT

★ 5 TO 10 WRONG
BE CAREFUL WHERE YOU TRAVEL

★ 10 TO 15 WRONG
ALWAYS TAKE A SURVIVAL INSTRUCTOR WITH YOU.

★ 20 OR MORE WRONG
YOU BETTER STAY HOME.

QUESTION ANSWERS

1 - (3DAYS L 2 - (1) 3 - (2-3-4-1) 4 - BRAIN 5 - COTTON 6 - WATER-WARMTH-ENERGY- REST-SECURITY .
7 - (2) 8 - (1-2-3-4-1-6) 9 - (3) 10 - (3) 11 - (ALL) 12 - (ALL) 13 - (1-2-3-5-) 14 - (3) 15 - (4)

THESE QUESTIONS AND THE ANSWERS ARE BY RECOGNIZED SURVIVAL PEOPLE.

16 - (4) 17 - (YES) 18 - (YES) 19 - (AT LEAST TRY) 20 - YOU ARE) 21 - (YES) 22 - (YES)
23 - (NO) 24 - (YES) 25 - (4) 26 - (ALL) 27 - (YES) 28 - (ALL) 29 - (4) 30- (3)

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If you cheat on this test by looking at the answers before you attempt to answer the question you are developing a cheaters attitude . If you cheat during your survival emergency you will pay with suffering

BEST COPY AVAILABLE

RECOMMENDED BOOKS AND FILMS

GENERAL INFORMATION BOOKS

Backpacking - One Step At A Time; Manning, Rec. Coop. Seattle
Mountaineering - Freedom of the Hills; The Mountaineers, Seattle
Boy Scout Handbook and Merit Badge booklets; Boy Scouts of America
Mountaineering First Aid; Dick Mitchell, The Mountaineers, Seattle
Advanced First Aid; Red Cross Handbook
How to Stay Alive in the Woods; Bradford Angier

SURVIVAL BOOKS

The Survival Book; Nesbit, Pond and Allen; Funk & Wagnalls
How to Survive on Land and Sea; U.S. Naval Institute
The Book of Survival; Anthony Greenbank; Wolfe Publications, London
Survival Handbook; Cassiday; Tower Publications
AF Manual 64-3, Survival Training Edition, Dept of the Air Force
Survival (Army) F.M. 21-76. U. S. Army
Food in the Wilderness; G. W. Martin and R. W. Scott
Primitive Medical Aid; Life Support Technology
Poisonous Plants of the Wilderness; Life Support Technology
Surviving the Unexpected, Curriculum Guide; Survival Education Assn.

FILMS

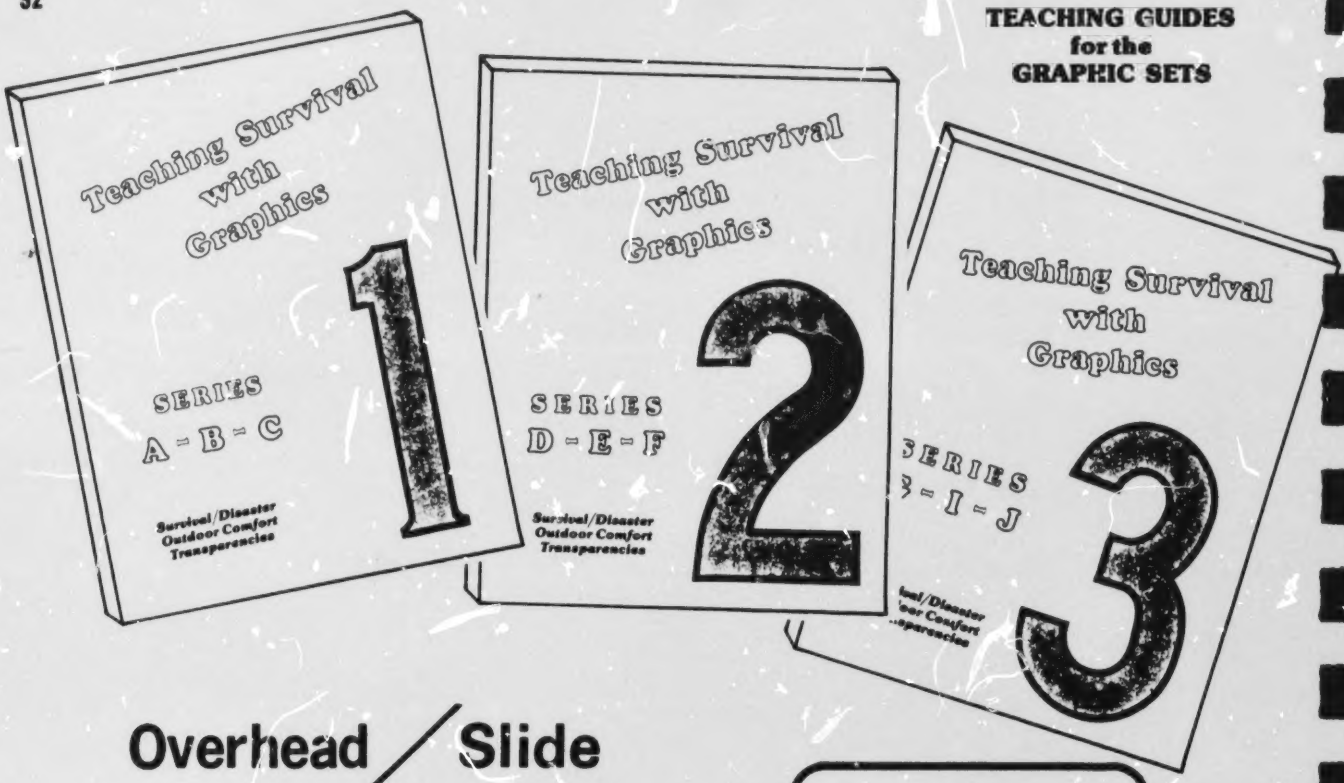
By Nature's Rules (Effect of cold). Mountain Rescue Association
Lost Hunter (Psychological effect). Film Originals, Boise, Idaho
Survival Stress (Psychological effect). A.F. - TF 1-5375. Air Force
Survival - Mountain & Desert (General). A.F. - TF-5571A., Air Force
Mountains Don't Care (Mountain). Mountain Rescue Association
Castles in the Snow (Winter). Life Support Technology.
Snow How (Winter - mechanical). Life Support Technology
Out of the Sea (Beach). Life Support Technology
Edible Plants of Field and Forest. Local film libraries.

Other survival films are available from:

Local, county schools or state film libraries
Visual Education and Audio-visual centers of State Universities
State Highway Patrol
United States Coast Guard
Civil Defense Coordinators - Local, State, and Federal Civil Defense also have many brochures regarding the subject.

The Survival Book, Nesbitt, Pond and Allen
Paper, pocket type, 338 pages, Funk & Wagnalls, F 65
is an excellent global survival book and a useful
resource book for teacher or instructor.

TEACHING GUIDES for the GRAPHIC SETS



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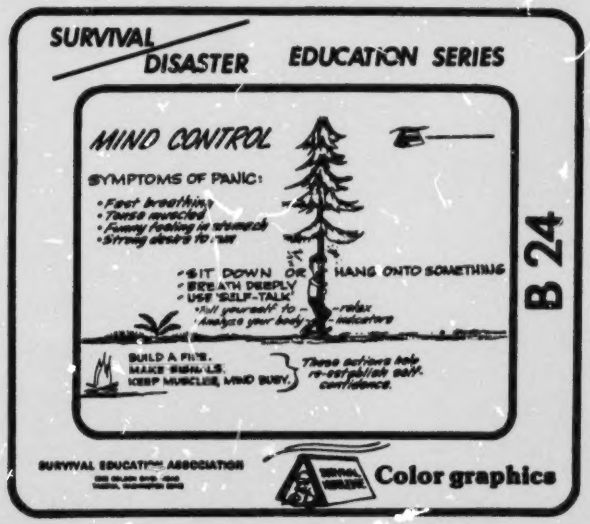

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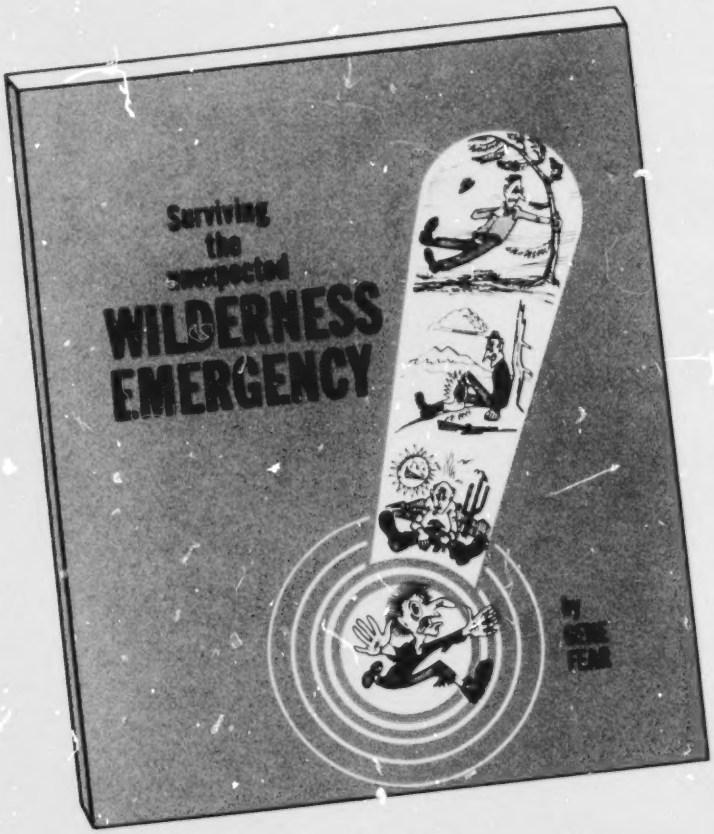

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